AMERICAN AGRICULTURIST.

Agriculture is the most healthful, the most useful, and the most noble employment of man.—WASHINGTON.

VOL. VI. NEW YORK, FEBRUARY, 1847. NO. II.

A. B. ALLEN, Editor. HARPER & BROTHERS, Publishers.

PLANTING THE ISABELLA GRAPE-VINE.

THE most favorable season for planting the Isabella grape-vine in the United States is when the red-flowered maple is in bloom, which usually occurs in Georgia from the 20th to the last of February, and five or six weeks later near Philadelphia and New York. In selecting the cuttings for a vineyard, they should be of one variety, and taken from the most fruitful part of the vine. Let us not content ourselves with single clusters, but those which are the most prolific. The greatest proportion of fruit grows from the buds on the last year's shoots next to the old wood, with the exception of the nearest eye, the top buds being unfruitful and seldom bearing at all. Some prefer to plant cuttings containing a considerable portion of the old wood; but as it is not always prudent nor economical to mutilate a favorite vine too much, it is best to select fruitful cuttings of the last year's growth, with the wood well ripened. They should be of a moderate size, short-jointed, and containing from six to eight eyes or buds in each. They should be cut off transversely from the vine, with a sharp knife, close to the old wood, and not less than two inches of blank wood should be left for the protection of the terminal buds. The ends of the cuttings that are to remain above ground should be cut in an oblique direction, and the sloping side should be opposite the side containing the uppermost bud. If possible, they should be planted in calm weather, immediately after separation from the parent vine, and be obtained from a soil, situation, and climate, similar to those in which they are intended to grow. If it be necessary to convey the cuttings from a distance, their lower ends should be immersed in a composition of fine earth, well mixed with linseed or other oil, of about the consistence of tar, as soon as they are cut off from the parent stock, at the same time taking the precaution not to cut off the top ends till the moment they are to be used.

If the situation of the ground be on a plain, or in a valley, it should be dug two feet in depth, and on rising ground three; but on a hill-side, somewhat steeper, it should be turned up at least four feet, in order that the roots may penetrate beyond the reach of drought. If the cuttings are intended to be planted in drills or rows, let there be formed trenches three feet in length, two feet in depth, and the width of a spade, leaving intervals or baulks, a yard in length, between the trenches till the row is finished. Then, with good virgin soil, if it be at hand, if not let it be procured from the woods, and fill up the trenches therewith, mixing it at the same time with a due proportion of leaf-mould or well-rotted manure, or what is still better, the leaves and husks of vines, or grape-seeds, in order to quicken and strengthen the growth of the plants. If a vineyard be the object which we have in view, let the rows or drills be trenched from five to ten feet asunder, according to the surface of the ground and the latitude of the place. If the situation be on a plain, in a high degree of latitude, the rows should be eight or ten feet apart; but if it be on the side of a very steep hill, or in a low degree of latitude, five feet will be sufficient; and on moderately inclined surfaces, or in higher latitudes six or eight feet apart will be all that is required. With regard to the direction of the rows, and the height to which the vines should be trained, they may run in a manner that will allow them to face any point of the horizon between south and east; and they may be supported on props, or trellises from six to ten feet in height, and even more, according to the vigor of the vines. But in cities, or about houses in the country, single vines may be trained on the sides and ends of buildings, on the sides of fences, or the trunks and branches of trees.

The ground having been prepared in the manner before described, the cuttings are next to be planted in the centres of the trenches, so that each terminal bud will be even with the surface, and directed towards the south. Then the earth must be firmly pressed round each plant, and should it subsequently settle and leave more than one bud above ground, more earth or mould must be added to bury them up. As soon as the season becomes hot and dry, it will be necessary to protect the cuttings from the mid-day sun, by means of matting or other materials, which should be removed towards evening, and allow them to remain uncovered until the next morning, at about the time of the disappearance of the dew. Strict attention must now be observed in keeping the soil around the cuttings continually moist, and should not this be effected by natural means, it must be done by sprinkling rain or river water over them, or what is still better, soap-suds, or other stimulating fluids, specially prepared for the purpose, but not too strong. Soon after the cuttings begin to take root, which may be known by the swelling of the buds above the surface, young shoots will gradually protrude, and the plants will require but little attention during the remainder of the season, except an occasional hoeing to destroy the weeds, and to loosen the soil in order to admit the air and moisture about the roots. Should the season prove dry, however, and the earth around the plants become parched, it will be necessary to irrigate them frequently with rain or river water, or with prepared liquids as suggested above. Early in autumn, rub off all the buds from each plant, except two, which are to be reserved for training the ensuing year. For subsequent treatment, see Browne's Trees of America, page 139.

NEW YORK FARMERS' CLUB.

Cisterns in Barn-yards.—Dr. Underhill remarked that he had seen barn-yards so placed on the side of hills that most of the rich liquid manures contained in them drained off to the already rich land at the bottom of the hill, and sometimes into the streams of the valleys, thus carrying away the chief fertilizing salts in a state of solution. He recommended that a water-tight cistern be formed of clay, masonry, or planks, in the lowest part of the yard, into which all the liquid part of the manure may readily be conducted. Near this cistern he would make a heap, in layers, of alluvial soil and all vegetable and animal matter at command, such as road-scrapings, turf-mould, leaves of the forest, the refuse of old wood piles, straw, refuse hay, potatoe-stalks, weeds and rubbish of all kinds from the garden, the refuse vegetables from the kitchen, the entrails and bones of fish, and the fragments of all dead animals. Between these layers he would apply sprinklings of pot-ashes, soda, shell-lime, charcoal, gypsum, soot, &c.; and then, with a crow-bar, he would make numerous holes quite to the bottom of the heap, and pour in at times the liquid manure from the cistern. (*a*) In thirty days, he said, he had made in this way 500 loads of manure good for all kinds of crops.

Dr. H. A. Field stated that he had been busily engaged for four or five years in restoring his farm to fertility by drawing out muck in summer or autumn, and forming alternate layers of it in his barn-yard, about a foot thick, with layers of animal manure three or four inches thick, scattering between each a springling of unslaked lime, and applying this compost the following spring and summer to his land and crops. He recommended that a layer of plaster, charcoal, or peat, should be put on the top of the compost heap, in order to prevent the escape of the ammonia and other gases evolved in the decomposition of the muck and manure, which will be greatly accelerated by the lime. He said that he was aware that some loss would follow from the use of quick lime in connection with putrescent manures; but he thought the precaution he had suggested, if properly observed, would fix most of the gases in the upper strata of the heap, and the little that would be lost would be more than compensated by the rapidity and perfect manner in which the compost is made.

(*a*) It is obvious that by the mode of making a compost as practised by Dr. Underhill, a considerable portion of the most valuable part of the manure will be lost by the escape of the ammonia caused by the action of the lime on the animal matter contained in the heap. His plan in every other respect is excellent, and could readily be remedied by sprinkling over the pile a layer of plaster, pulverized charcoal, dried peat, or rich mould.

AMERICAN AGRICULTURE.

It is really a great satisfaction to get hold of an American treatise on Agriculture, that has a plain, practical, common sense character of *its own*. So many mere patchers and compilers are there, who, without any practical knowledge of their own, use their scissors shamelessly upon the productions of English authors, thus readily making *books* without taxing their own poor brains, books too, that are really of no value in this climate and country—books that only serve to puzzle and bewilder the farming novice—that, we repeat, it is with unusual satisfaction we have opened this new, compact duodecimo volume.

Mr. R. L. Allen, of Buffalo, the author of this work, is already known to the agricultural public as a thorough practical farmer and stock breeder. That he well knows what he is about on a farm, these pages abundantly show. No mere book-maker could have written such a book; and we may add, also, that no mere practical farmer could have written it. A "good practical work" can only be written by a man who has both thought and acted well.

What distinguishes this volume, is its conciseness, its clearness, and its perspicuous treatment of the subject in hand. The reason why most agricultural works are prolix and heavy, is because their authors had not made the subject thoroughly their own No man can write clearly and plainly about what he possesses only indistinct and confused notions himself. And no man can have clear and distinct ideas, regarding any practical subject like agriculture, however conversant he may be with *Stephens' Book of the Farm, Loudon's Encyclopedia* or *Von Thaer's Principles*, unless he is able to *digest* all the more valuable theories contained in these

works *in his every day practice.* Otherwise it is only like Calvin Edson, the walking skeleton, dining on roast beef and plum pudding.

What American farmers want, as we conceive, at the present moment, are plain and sensible reasons for our *best* agricultural practice, *as it is*, and equally common sense hints and directions *for its improvement.* Books written upon such a plan, by competent men, will go a thousand times farther toward making good husbandmen, and improving those already skilful, than a republication of all the elaborate English, French, or German systems of draining, subsoiling, and irrigating, that the best authors of the other side of the Atlantic have yet produced.

It is idle to lay before farmers, in a country like ours, where capital is rarely or never employed in farming—where land is plentiful, but labor scarce and dear—systems of farming, based on just the contrary state of things—where farming is carried on with abundant capital, and where the price of labor and the means of tillage are such that it will pay a good interest upon the capital employed. It is very much like discoursing to the keeper of a "country store," upon the large principles of commerce which govern the transactions of such houses as the Barings, or Brown, Brothers, and Co.

We think, therefore, that Mr. ALLEN'S volume, the basis of which is good practical farming, as practised by the best cultivators in the United States—with an intelligent reference to those principles of science which lie at the root of all successful practice, is likely to be of as much or more real service to us, than any work on agriculture yet issued from the press, and we gladly commend it to the perusal of every one of our readers engaged in the cultivation of land.

Its character, indeed, is essentially that of a manual, or *handbook.* "It is intended," says the preface, "as one of the first in the series of lessons for the American farmer. Its size precludes its embracing anything beyond the shortest summary of the principles and practice by which he should be guided in the honorable career he has selected. As a primary work, it is not desirable that it should comprise so much as to alarm the tyro in agriculture with the magnitude of his subject. A concise and popular exposition of the principal topics to which his attention will necessarily be directed, will, it is believed, in connection with his own observation and practice, give him a taste for further research, which will lead him to the fullest attainment in agricultural knowledge, that could be expected from his capacity and opportunities."

This is a very modest introduction to a work, which, if only "a brief compend," contains *less speculation, and more pith and sense*, than one in a hundred of the volumes now being offered on the cultivation of the soil.—*Horticulturist.*

The above work is advertised for sale on our last page, price one dollar.

EAGLE SELF-SHARPENING PLOWS.

THIS is a new article, recently got up by Messrs. Ruggles, Nourse & Mason of Massachusetts. Five sizes are made, varying from the small one-horse plow, up to the large breaking up plow. They have the same superior form and general construction as the celebrated Eagle plows of their make, with the exception that the point and share consist of two pieces which are made on an *improved self-sharpening principle.*

A SELF-SHARPENING PLOW.—FIG. 9.

The point, as shown detached at 1, is simply a bar of *wrought* iron *steeled* at each end, about twenty inches long, and passes upward into the body of the plow, where it is confined with one bolt. As it becomes shorter, and worn on the under side, it is readily moved forward and turned the other side up, thus always presenting a sharp point of *full length* and *proper shape.* When one end is worn off five inches, the other end is placed forward and performs a like service. The wing or share as shown, detached at 2, is either made of wrought iron with steel edge or of cast iron, and is also reversible, being used either end forward or either side up.

Both point and share are so very simply constructed that any blacksmith can replace them at trifling expense, or perpetuate the use of the original by new-laying with steel, as they become worn.

There is a coulter of cast-iron a little back and above the point, shown detached at 3, forming a part of a cap, shown detached at 4, which cap protects the shin or forward part of the mould-board. It is confined in its place by the same bolt that confines the point, and is cheaply replaced when worn. This is much less expensive, and in many kinds of soils quite as serviceable as a wrought coulter or cutter, as shown by the cut above. They are sold with one or both, or with the cap simply. We commend these plows particularly for the southern plantations, for their own blacksmiths can easily repair them.

Self-sharpening points and shares have been considered objectionable, inasmuch as they have not possessed sufficient strength, owing to their complicated *construction* of *cast metal;* but a single glance at these plows will convince any person, by the simple construction of the point and share of *wrought iron* and *steel*, that they combine strength and durability unequalled by any other form or construction, and that they are kept in repair at much less trouble and expense.

A MOWING MACHINE.

Can any of our readers inform us where a mowing machine is to be had, which will do first rate work? We have seen them operate, but there was this objection—unless the ground was quite smooth they would not cut clean. The scythe in a reaping machine moves and cuts several inches above the ground, which enables it to work well over quite a rough surface. The straw being of little value, a long stubble left behind is of no particular importance. But grass it is important to cut close, or there will be great loss in the hay product. Hence the comparative difficulty of making a mowing machine which will work as economically and effectually as the reaper. Still, we hope mechanics will not despair of constructing one which will do its work well, for we do not know a greater desideratum among farmers. During harvest time, wages are not only exorbitantly high, but men enough to do the work are difficult to be obtained. The consequence is, that the grass is frequently injured, and great loss is often sustained. All this would be obviated with a good mowing machine.

Farmers, send in your Facts.—The old year has passed away, and nearly a month of the new one has expired, while we have been looking in vain for statements from the farmers of their large crops raised at a small expense and by improved cultivation. Why is this? Have there been no improvements the year past in our worn-out lands? or are the farmers and planters of the older settled States giving up discouraged and moving off West? This, we trust, is not the case, but the main difficulty is owing to modesty, or a want of confidence in their ability to write for the press. If they would make out plain statements of their farming operations, in their own way, however homely, much would not only be done to stimulate others to follow their example, but to go far ahead of them by competition and emulation.

AMERICAN AGRICULTURAL ASSOCIATION.

Introduction of the Alpaca into the United States.—Col. Edward Clark, chairman of the committee appointed by the Association for introducing this animal from Peru into this country, stated that there is a prospect of $2,000 more being added to the funds already raised, and that it is contemplated to send an agent to South America the ensuing spring for the purpose of carrying the enterprise into effect. Col. Clark then called upon Mr. J. D. Williamson, who had resided some time in Peru, and requested that he would give some information upon the subject.

Mr. Williamson, in complying with the request, stated that the alpaca is an animal that endures a great deal of hardship, and that there is no doubt but it can be successfully and profitably propagated in the United States. He said that its habits are something like those of the Canadian horse—picking up what no other animal will eat, even while the ground is covered with snow. The reason, he said, why these animals have not succeeded better in Great Britain is that proper regard was not paid in their selection in Peru, and that their treatment during their voyage and after their arrival was injudicious. He thought that choice animals could be obtained on the west coast of South America, for $8 or $10 each, and that they could readily be transported to Panama in whale ships, driven over to Chagres, and re-shipped direct for the United States.

The Potatoe Disease.—Vice-Chancellor McCoun rose and said, he wished to call the attention of the Society to a subject of great interest to this country as well as to the world at large—the *Potatoe Disease.* Before proceeding to the immediate object in view, he begged leave first to make a few remarks on the origin of the malady, which he said first broke out in Europe, in 1843. (*a*) In 1844 it made greater progress than in the preceding year, and in 1845, it had assumed decidedly the appearance of an epidemic—its focus being apparently Belgium, whence it seems to have spread to all parts of the globe.

The Chancellor then detailed various opinions and experiments of scientific men in Europe, among which were those recently made by Dr. Smee, of London, who has proved, to his own satisfaction at least, that the true cause of the disease is a species of Aphis, or plant louse. This insignificant insect, he said, attacks the leaf of the potatoe by sucking out the juice, generally by commencing on the under side, and continuing its operations until it extracts the whole moisture from the plant, which, in due time, dies down to the ground, and the tuber perishes or decays. (*b*)

The Chancellor concluded by saying that his object in introducing this subject was for the purpose of offering a resolution for the consideration of the Society, which was as follows:—

Resolved, That a Committee of five be appointed on behalf of this Association, to ascertain whether any species of *Aphis*, or other insect, is instrumental in causing the potatoe disease in this country. That, if such committee shall be unable to ascertain the fact, from any observations of the past year, they be requested to take the necessary measures to ascertain it during the ensuing season, by personal inspection of growing crops, or by any other means in their power.

This resolution was adopted, and the following committee were chosen, viz.—Vice Chancellor W. T. McCoun, Dr. A. H. Stevens, R. L. Pell, Dr. R. T. Underhill, and Ambrose Stevens.

Mr. Williamson read the following abstract, translated from the Transactions of the Viceroy of Santa Fé de Bogota, at the time it was under the dominion of Spain:—In 1762, the entire potatoe crop of all the provinces under the Viceroy, for that year and the year previous, rotted in the ground, or died while in a growing state. A commission was appointed to investigate the subject; and after visiting a large number of provinces they were unable to ascertain from what cause the rot proceeded, other than the potatoe had *run out*, or exhausted its vitality. From an old Indian slave, by the name of Leo, they learned that a tradition had been handed down by his tribe for more than a hundred years, that "when the potatoe did not grow good, they must plant the seed collected from the healthy vines, and

in a certain number of moons all would be right again."

In a report from one of the commissioners, made in 1767, it was ascertained that among those planters of the provinces who had propagated new varieties from the seed-balls of healthy tubers, not a rotten potatoe had been seen.

(*a*) During the last 10 years it has been observed in some parts of Germany, that the potatoe has exhibited a marked change in its vital powers, and as long ago as 1839, a disease appeared which, within a short time, destroyed thousands of bushels. This, however, was the dry gangrene (Kartoffelfäule), which speedily changed the tubers into a brown, dry powder, and rendered them unfit for every kind of use. The disease, at that time, was thought to be caused by small, white insects, resembling cheese-mites, which were found in the interior of the potatoe, and were believed to be transformed into living flies.

(*b*) The causes for the disease have been suggested to Professor Lindley, and commented upon by him as follows:—1. The bad season of 1845; 2. Attacks of parasitical fungi; 3. Insects, worms (the idlest of all speculations); 4. Frost; 5. Lightning; 6. Exhausted vitality; 7. Bad cultivation; 8. Guano or other manures; 9. Fog from the ocean; 10. Miasmata, such as produce cholera in man, and murrain in cattle. The last explaining an unknown cause by an unknown agency, whose mode of action in the first instance is beyond human perception, may be taken as the last and best refuge of theorists, for it is alike incapable of proof or disproof.

Of the remainder we shall only say that they appear to us to be all untenable. Even the season of 1845, which seemed to us and so many others peculiarly suited to bring on the affection, we long ago disclaimed as a true cause; for irresistible evidence to the contrary accumulated during the winter. In fact, no theory of the potatoe disease will satisfy the conditions of the problem, unless it explains the following unquestionable facts:—

1. It has for some years past been violent in St. Helena.

2. It appeared in the year 1845 at Genoa and Lisbon, and at Grahamstown in the Cape Colony, *exclusively* in potatoe crops obtained from English "seed," and therefore of the growth of 1844.

3. It appeared in 1845 in the Bermudas, in fields cropped with potatoes obtained from the United States, and not in those which had been cropped with Bermuda sets.

4. It has broken out in New Holland, upon the authority of Dr. Francis Campbell, in a letter to the Sydney Morning Herald, dated March 18th, 1846.

5. It was little known in bog or moss-land in 1845, and now has broken out there with as much violence as elsewhere.

6. It is accompanied by an increased excitability of the potatoes both young and old.

7. It *invariably* begins as a brown decay of the bark of the potatoe-stem, under ground, and an inch or two above its origin from the old set. To this we have never yet found an exception; all the blotching and searing of leaves are long posterior to this.

8. It has broken out at this moment (Aug. 12, 1846), in crops obtained on well-drained unmanured land from sets imported from Naples, the Azores, Oporto, and New Granada, every one of which places was reported to be uninfected.—*Gardener's Chronicle.*

CULTIVATION OF THE WATER-CRESS.

The common cress (*Nasturtium officinale*), well known for its highly salutary and antiscorbutic properties, presents two varieties, the *green* and the *blue*, which, like most cultivated plants, have been rendered far superior to what they were in their indigenous state; being less acrid, and not so liable to contract the taste of slime and mud as those found in marshes, ditches, and brooks. The history of the cultivation of this plant on the continent of Europe affords some interesting particulars, which will serve to exemplify the advantages that accrue, with proper attention, apparently from the humblest object.

About the beginning of the present century, an attempt was made to form cress grounds in the neighborhood of Paris, similar to those then common on the banks of the Rhine, by the Count de Lasteyrie; but without success; while the markets of that capital were supplied only by persons who travelled to distances, sometimes of 40 leagues, collecting the cress wherever it could be found. The supply was seldom sufficient to satisfy the limited demand, although it frequently consisted of nothing more than bunches of marshy plants masked by a few sprigs of the genuine vegetable. In the winter of 1809, Monsieur Cardon, then principal director of the hospital chest of the grand army, was quartered with his staff at Erfurt, the capital of Upper Thuringia. Walking one day in the environs of the city, when the earth was covered with snow, he was astonished by the sight of several long trenches, from 10 to 12 feet in width, covered with the most brilliant green. Curious to know the cause of what appeared to be a phenomenon at that season, he walked towards them, and perceived with the greatest surprise that the trenches formed a large plantation of water-cress, presenting the aspect of a verdant carpet on a surface in every direction white with snow. In answer to his inquiries, M. Cardon learned that the plantations had existed for many years, and belonged to the authorities of the city, from whom they were rented by the cultivators at the annual sum of $12,000. Since that time, however, their value has greatly increased. From a statement published in 1830, we find that the annual return then amounted to more than $40,000; and that the cress, highly esteemed for its purity and superior qualities, was sold in all the cities on the Rhine, and in the markets at Berlin, at a distance of 120 miles from the place of its growth. M. Cardon foresaw the benefits that might be expected to rise from the introduction of this branch of horticultural industry into the neighborhood of Paris; and, after a long search, found 12 acres of a thin sandy alluvium at St. Leonard, in the valley of the Nonette, between Senlis and Chantilly, which, containing many beautifully limpid springs at a temperature of 59°, appeared to be well adapted for a cress plantation. He engaged two well-informed individuals from Erfurt who were

acquainted with the method of cultivation. The ground was laid out in trenches of 250 feet in length by 12 feet in breadth; which were, however, afterwards reduced to one-half of those dimensions, as it appeared that the water lost its natural temperature, and froze in the winter, by flowing over so large a surface. In a few years, after an expenditure of $16,000, there were 92,000 square feet under cultivation. It was no longer the cress clandestinely gathered, often in flower, or run to seed, that was exposed for sale in the French metropolis. The cress of St. Leonard arrived, packed with a care to which the Parisians were strangers. Its freshness and purity were such, that the market-women, of their own accord, offered double the usual price before any demand had been made; and, in testimony of their high satisfaction, feasted the journeyman cultivator who had come to superintend the sale, and the wagoner, and sent them home decorated with ribbons and flowers.

The French growers are particularly careful in warm weather, and guard the plants from exposure to the least storm, as they then turn yellow. They pack them in baskets, which contain from 25 to 30 dozen of bunches, so arranged as to leave a circular opening or chimney up the centre, which always remains empty. The baskets are then placed on rails fixed across a wagon, so as to permit a free current of air through all the openings; and in the summer, before putting on the tilt, the whole are well watered, to preserve their freshness during the night, and they are delivered at the market early in the morning in the most perfect condition. The regularity of the arrivals and constant freshness of the cress sent every day from the grounds of St. Leonard, not only insured the success of the scheme, but brought forward a host of competitors. M. Cardon's German workmen left him to commence rival establishments; and there are now in the environs of Paris 16 plantations, producing annually 1,350,000 dozen of bunches, valued at $89,000; and, adding the charges of transport, and expenses of all the individuals employed in this branch of trade, which, a few years ago, had no existence, the sum actually circulated amounts to not less than $300,000!

The culture of cress requires much attention and watchfulness, especially in winter, in which season, during a single night, a sharp frost may destroy a whole plantation, if too remote from the springs to retain their mild temperature. The ground is generally laid out in parallel trenches, separated by small mounds, on which succulent vegetables may be grown. The bottom should be covered with several inches of sandy vegetable earth, perfectly level and equalized, so that the water may have a regular flow in every part. The months of March, April, or September, are the most favorable for putting in the plants, which are generally set in suckers or tufts, 8 or 10 inches apart. A well-planted trench will be in full bearing after the first year, according to the temperature of the water and the nature of the soil. The activity of the vegetation depends particularly on the state of the atmosphere; but if the plantation has been made with care, and the plants well chosen, it will require no other precautions, with the exception of occasional weedings, than those necessary to guard it from winter frosts, and the irruption of foul and muddy water in thaws and storms. In favorable seasons the cress may be gathered every three weeks; but in cold weather two months are sometimes required to bring the plants to perfection. After these gatherings, it is customary to roll and level the bottom of the trench, or to manure when required. A good plantation will last a long time; but it should be renewed by the same process as at first, whenever it shows signs of decay. Sometimes, in frosty weather, the supply of water is increased until the plants are completely covered; but as this submersion weakens them, it should not be continued longer than absolutely necessary. Mr. London describes the process as follows:—Some market gardeners, who can command a small stream of water, grow the water-cress in beds sunk about a foot in a retentive soil, with a very gentle slope from one end to the other. Along the bottom of this bed, which may be of a convenient length and breadth, chalk or gravel is deposited, and the plants are inserted about 6 inches every way. Then, according to the slope and length of the bed, dams are made 6 inches high across it, at intervals; so that when these dams are full, the water may rise not less than 3 inches on all the plants included in each. The water being turned on, will circulate from dam to dam; and the plants, if not allowed to run to flower, will afford abundance of young tops in all but the winter months. A stream of water no larger than what will fill a pipe of an inch bore, will, if not absorbed by the soil, suffice to irrigate in this way an eighth of an acre. As some of the plants are apt to rot off in winter, the plantation should be laid dry two or three times a year, and all weeds and decayed parts removed, and vacancies filled up. Cress grown in this way, however, is far inferior to that grown in a living stream flowing over gravel or chalk.

PRESERVATION AND APPLICATION OF MANURES.—No. 2.

In your August number, p. 250, vol. 5, I presented some reflections on this important subject, and indicated an intention to renew it in a future number. Some delay has been occasioned by indispensable engagements. I now propose to complete the remarks I intended to make.

In my former number it was shown that, except *nitrogen*, the *organic* substances which are required as food for plants, are furnished in sufficient abundance from the elements of water and the atmosphere. That, in the opinion of Liebig, "the most important object of agriculture is to furnish the soil with *nitrogen*, in a form capable of assimilation;" and, I added, that it was equally important, "when alkalies are deficient, or when they have been exhausted, that they should also be supplied." It must, however, be recollected, that where *alkalies* are deficient in a soil, they may be *substituted by alkaline earths*. "The principal problem for agriculture is how to replace those substances which have been taken from the soil, and which cannot be furnished by the atmosphere." It was shown in my former number, that the most important of these are "the alkalies and the alkaline earths; phosphates, silica, manganese, oxides of iron, and various acids, com-

bined with alkalies, and alkaline earths." Liebig remarks, in the letter above referred to, that the barrenness of a field is not owing to a deficiency of carbon, because we are able to increase its produce by supplying substances that contain no carbon. He adds, "in furnishing plants, therefore, with mineral elements, we give them the power to appropriate carbon from a source which is inexhaustible; while, in the absence of these elements, the most abundant supply of carbonic acid, and of decaying vegetable matter, would not increase the produce of a field."

In various parts of Liebig's letters on chemistry, from which the above is quoted, he enforces in the strongest manner the necessity of a complete supply of the alkalies, alkaline earths, and other mineral elements, in all soils; and declares that their barrenness arises solely from a deficiency in these elements, which are derived from *the soil;* and nitrogen, which, though derived from the *atmosphere*, is not supplied in adequate quantity from that source.

Without making farther quotations from the highly valuable letters referred to, I would advise all who wish to obtain full information on this interesting subject, to study them diligently, as they contain in a small compass a great deal of valuable information in relation to the true cause of the exhaustion of soils—which, in his opinion, is owing more to the diminution of mineral elements than to any other cause. Taking it for granted, then, that all that is necessary to preserve and perpetuate the fertility of our soil is to keep it *sufficiently* supplied with *nitrogen;* and with the substances above enumerated which growing plants must derive from the soil, I will endeavor to explain in your next number how this can be best accomplished.

Prospect Hill, Ky., Jan. 8th, 1847. A. BEATTY.

THE LAND SABBATH.—In the Mosaic code, it was required that the land should rest from tillage every seventh year, which was undoubtedly intended to prevent the soil from being worn out by excessive cultivation, a religious sanction being given to this law to prevent its infraction. Moses, in describing the calamities that would follow from its disobedience, says:—

"Then shall the land enjoy her sabbaths as long as it lieth desolate"—*Leviticus* xxvi., 34.

Thus plainly indicating that, if not permitted to rest from tillage, land would become exhausted and lose its fertility by the short-sighted policy of man. Hence the advantage of suffering worn-out lands to lie in fallow, or to grow up with trees, in order to restore them to their original fertility.

INTERESTING CHEMICAL FACTS.—Water saturated with one-third of its weight of common salt will still dissolve sugar; and if completely charged with carbonic acid, it will dissolve iron.

Water in freezing expands by nearly one-seventeenth of its volume. It also expands while cooling in a liquid state from 39.39° F. to 32°.

Starch becomes sugar by boiling 48 hours in 100 parts of water and 1 part of sulphuric acid.

ANALYSIS OF THE OAT.—No 1.

A CHEMICAL inquiry into the nature of the oat would be of importance in almost any part of Europe, but it becomes a kind of national object in a country where, as in Scotland, oatmeal forms almost the sole food of a large portion of the population. But though Scotchmen have long fed and thriven upon it, and have carried their estimation of its virtues to every quarter of the globe where their adventurous footsteps have penetrated, the true properties of the oat, its chemical constituents, the physiology of its growth, have been almost unnoticed. The few investigations hitherto published have been of a partial character. Hermbstädt and Sprengel were among the first who made experiments on the subject at all worthy of confidence. More lately Boussingault has published a single analysis; but no researches of an extended nature have hitherto been published.

To the Highland and Agricultural Society belongs the honor of first encouraging an extended inquiry for the purpose of increasing our knowledge as to the general value of the oat, as food for man and beast, and as to other points, physiological and practical, connected with its growth and cultivation. The encouragement of such researches is well calculated to retain for the Society its high position, and if possible to increase the estimation in which it is held, as the parent of the Agricultural Societies in the British Islands.

In the laboratory of the Agricultural Chemistry Association, Mr. John P. Norton, now pursuing his studies at Utrecht, in Holland, enjoyed great advantages for the prosecution of such an investigation. The kindness of Professor Johnston afforded him every facility, while his great experience pointed out the proper method for the prosecution of his inquiries.

In the detail of Mr. Norton's results, he has endeavored so to arrange them as to present a distinct connected view of the whole investigation, such as is necessary for its full appreciation. He commenced with that which naturally comes first, the young plant, and followed it through its successive stages of growth and development to maturity. This part of the subject completed, he proceeded to the consideration of the full-grown plant.

The result of Mr. Norton's inquiries was published by the Highland Agricultural Society, from whom he received a premium of FIFTY SOVEREIGNS ($250). As his Essay contains a larger amount of truly scientific and practical information on the oat than has hitherto been published, we propose to give it a place in our journal, in a series of numbers, hoping in so doing that it will not only be acceptable to our readers, but will tend to promote the culture of this important grain, and point out the modes of expending it to the best advantage.

(A)—OF THE QUANTITY OF ASH YIELDED BY THE SEVERAL PARTS OF THE UNRIPE PLANT.—As soon as the plants were received, portions of the several parts were weighed for the purpose of determining the water, and dried at a temperature not exceeding 212° Fahrenheit, until their weight became constant. At least three separate portions of each part were taken to provide for accidents, and to secure, at least, two concurring determinations

TABLE 1.

Day of the Month received.	June 4.	June 11.	June 18.	June 25.	July 2.	July 9.	July 16.	July 23.	July 30.	Aug. 6.	Aug. 13.	Aug. 20.	Aug. 27.	Sept. 3.
Per cent. of Water.....	80.51	82.76	82.02	78.53	80.26	76.97	76.53	77.61	77.00	76.63	74.06	79.93	70.68	24.60
Per cent. of Ash.....	2.16	1.86	1·63	2.35	2.24	2.81	3.06	3.85	3.78	3.75	6.14	4.25	6.49	15.78
Do. calculated dry.....	10.83	10.79	9.07	10.95	11.35	12.20	12.61	16.45	16.44	16.05	20.47	21.14	22.13	20.90

During the whole growth of the plant the diminution in the quantity of water in the leaf was not great, being only about 10 per cent. from the 4th of June to the 27th of August. So late as the 20th of August it was nearly as high as at first. When the plant becomes ripe, however, the leaf at once withers, and this accounts for the great decrease of water between the 27th of August and the 3d of September. This decrease in the water gives a great apparent increase of ash in the undried leaf. When calculated dry, in the third line, there appears an actual decrease from the two preceding weeks. There may have been some change in the circulation at the last, by which a portion of the inorganic materials were carried back into the stalk.

Of the Stalk.—The per-centages of water, of ash, and of ash calculated dry, were determined as in the leaf.

TABLE 2.

Day of the Month received.	June 4.	June 11.	June 18.	June 25.	July 2.	July 9.	July 16.	July 23.	July 30.	Aug. 6.	Aug. 13.	Aug. 20.	Aug. 27.	Sept. 3.
Per cent. of Water.....	87.04	87.05	87.13	84.74	83.66	82.05	80.85	79.60	76.64	75.66	69.80	76.27	71.57	71.70
Per cent. of Ash.....	1.36	1.28	1.28	1.40	1.28	1.40	1.52	1.63	1.74	2.01	2.00	1.58	2.19	2.36
Do. calculated dry.....	10.49	9.88	9.32	9.17	7.83	7.80	7.94	7.99	7.45	7.63	6.63	6.66	7.71	8.35

While the above were drying, others were weighed from which to determine the ash. The burning was always effected in platinum vessels over argand gas-burners, and at a dull red heat.

The first specimens of the young plant arrived on the 4th of June, and the succession at weekly intervals was uninterrupted until the cutting of the crop on the 3d of September. The oats were of the potatoe variety, and though retarded by the unusually wet season, were uniformly strong and healthy, the sample proving one of uncommon excellence. The plants on the 4th of June were from 4 to 6 inches in height, consisting merely of one leaf, and the commencement of the stalk. These two parts, therefore, are first to be considered, as to the quantity of ash which they yield.

Of the Leaf.—The preceding table exhibits the proportions in the leaf at successive stages of its growth—1. Of Water. 2. Of Ash. 3. Of Ash calculated dry.

The decrease of water during the growth of this part is considerably more than in the leaf. The quantity of ash in the undried straw (second line) increases toward the end, as in the undried leaf. This, in both cases, is owing to the gradual disappearance of the water; for we see, in the third line, that the actual per-centage of ash in the *dried* stalk, is less on the 3d of September than it was on the 4th of June. In the earlier growth of the stalk the dried stem or solid part, though less in quantity, actually contains a larger per-centage of ash than is afterwards necessary to its perfect maturity. As the stalk is the stem of the plant, through it must pass the inorganic materials necessary for the building up of all the other parts. How wise the provision, which enables it to furnish an abundance of these materials at the time when they are most needed! Between the 6th and the 27th of August the demand upon the straw was very great; at this period the grain was most rapidly attaining its full size; the leaf also between the 13th and the 20th of August increased its per-centage of ash from 16 to 21. When these parts have attained their full size, and approach maturity, the ash in the stalk begins to accumulate again, as is seen in the two last weeks. This is at the same time that the decrease in the leaf mentioned above takes place.

From the very large per-centage of water in the stalk on the 3d of September, when the oats were cut, it is evident that there must be an immense diminution during the drying of harvest, as I have seldom found more than 12 or 14 per cent. of water in straw taken from a well-made stack. This will appear in a subsequent table.

Of the Quantity of Ash in the Knots.—It was not until the 23d of July that determinations of ash and water in the knots were commenced. Professor Johnston has stated in his Elements of Agricultural Chemistry, some curious facts respecting the knots in the stalks of wheat, rye, bamboo, &c. He says, that the ash of this part is larger in quantity, and contains a greater proportion of silica, which in the bamboo is sometimes found in solid masses. To ascertain if the quantity of ash in the knots of oats varied greatly

from that in the whole straw, these trials were made.

TABLE 3.

Day of the Month received.	July 23.	July 30.	Aug. 6.	Aug. 13.	Aug. 20.	Aug. 27.	Sept. 3.
Per cent. of Water, - -	76.05	75.54	74.82	75.29	75.38	73.55	70.65
Per cent. of Ash, - -	2.40	2.54	2.63	2.80	2.90	2.98	3.14
Do. calculated dry, - -	10.02	9.60	10.44	10.48	11.79	11.27	10.70

The variation in the per-centage of water in this table is not large. The ash is, in accordance with Professor Johnston's results, larger in quantity than in the straw, taken as a whole. The difference in the ripe plant amounts to 2 per cent. But in Table 2 the ash is given from the *whole straw*, including the knots; the difference therefore between the knots and the straw, taken separately, would be at least 4 per cent. The variations in the per-centage of ash, shown by the above table, are not very striking.

Of the Quantity of Ash in the Chaff.—The determinations of ash and water in this part of the plant commenced on the 16th of July I must here mention, that by the chaff I mean the outer covering which envelopes the oat during its growth, becoming looser as it ripens, and finally falling off during thrashing. Per-centage of ash and water exhibited as before.

TABLE 4.

Day of the Month received.	July 16.	July 23.	July 30.	Aug. 6.	Aug. 13.	Aug. 20.	Aug. 27.	Sept. 3.
Per cent. of Water,	55.01	56.95	50.49	45.04	40.86	47.08	40.44	21.96
Per cent. of Ash,	2.72	3.92	6.08	7.83	11.05	11.20	13.38	21.43
Do. calculated dry,	6.00	9.11	12.28	13.75	18.68	21.07	22.46	27.47

The quantity of water given by Table No. 4, is much less, while that of ash is much greater, than in any other part of the unripe plant. The extraordinary quantity of 27 per cent., as given in the third line, is very remarkable. It is to be observed, however, that in no other specimen of chaff have I found so high a per-centage. The crop, as I have before stated, was unusually vigorous, and grown on a deep rich loam, where everything it required seems to have been in abundance, and the per-centage of ash in every part is uncommonly large It will be noticed that the increase of ash is more steadily progressive than in any of the other parts.

Of the Quantity of Ash in the Oat.—It is necessary for me here to explain, that, in speaking of the *Oat*, I always mean the seed and husk together. By the *Grain*, I mean the seed divested of its husk. This distinction will prevent confusion. The oats did not become sufficiently developed for separation from the stalk until the 2d of July. The same treatment was pursued as with the other parts, and the following table exhibits the results.

TABLE 5.

Day of the Month received.	July 2.	July 9.	July 16.	July 23.	July 30.	Aug. 6.	Aug. 13.	Aug. 20.	Aug. 27.	Sept. 3.
Per cent. of Water,	80.84	75.56	69.83	63.22	62.06	62.44	55.11	49.76	45.92	30.74
Per cent. of Ash,	0.94	1.02	1.17	1.33	1.60	1.62	1.87	1.83	1.90	2.53
Do. calculated dry,	4.91	4.36	3.38	3.62	4.22	4.31	4.07	3.64	3.51	3.65

During the growth of this part of the plant, the per-centage of water steadily decreased to considerably less than one-half of the original quantity. As in the stalk, this has caused an apparent increase of ash (second line), but when calculated dry (third line), there is an actual decrease. This diminution of ash occurs only in these two parts of the plant. I have already given a probable explanation of the cause in the stalk, and think that one equally simple may be given as to the oat itself. Every one who has noticed its growth, knows that the husk, being necessary for the protection of the grain, is formed first, and attains nearly its full size while the grain is yet scarcely visible. A subsequent table will show that the husk contains about three times as much ash as the grain. During the first growth of the oat, this husk, requiring an abundance of inorganic materials, is to be formed, and we accordingly find such a proportion of these materials present, as are not found at any subsequent period. When the husk is formed the grain enlarges, and as it gradually becomes three-fourths of the oat, the per-centage of ash, taking the two together, of course diminishes. By reference to Table 2 it will be seen, that on the second of July, just when the oat began to show itself, a sudden decrease took place in the ash of the stalk. The per-centage of water in the oats when the crop was cut, on the 3d of September, was more than twice as much as I have found in those taken from the granary or stack-yard.

Heretofore I have only spoken of the quantity of ash yielded by the several parts of the plant; I now would direct attention to the composition of this ash, which will constitute the second division in the series.

REMARKABLE INSTANCE OF THE VEGETATION OF MAIZE.—In the year 1754, a member of the Bath Society, England, obtained, while at Strasburgh, an ear of Indian corn, which was preserved with the husks on until the 28th of February, 1788, when six grains were taken from it, soaked in water 24 hours, and planted in earthen pots, in a hot-house. In about twenty days they began to appear, and four out of the six grew to about the height of three feet, and two produced ears completely formed. The pots were taken out of the hot-house the latter part of June, and the ears were gathered the beginning of October. Six other grains taken from the same ear were planted in a garden without soaking, but showed no signs of vegetation.

THE ARMY WORM.

THE destruction of the army worm will be greatly facilitated when the Southern planters become better acquainted with the history of insects in general. I therefore add to my observations in your last number a few remarks in answer to your correspondent whose letter has not been published, and who appears earnestly to desire information founded on "fact," but not on "theory." I will begin by stating that insects classed under the generic term, Lepidoptera, are butterflies, moths, and sphinges. Their larvæ are caterpillars, and have six true legs, and from four to ten fleshy proplegs. Pupæ, with the cases of the wings indistinct, and soldered to the breast. Some kinds of caterpillars are domestic pests, and devour cloth and animal substances; but the greater number feed wholly on vegetable food; certain kinds being exclusively leaf eaters, while others attack the buds, fruit, seeds, bark, pith, or roots of plants.

All of these have different modes of feeding, and protect themselves from injury as their necessities may require. Some spin sacks almost as soon as they are excluded from the egg, which they carry with them, and into which they retire as danger approaches, protruding their bodies all but the hind feet, when feeding or moving from place to place. For example, the bee and woollen moths, &c., when about to change to the pupa state, creep into some secure place, attach one end of the sack firmly to the wall, closing both ends, and there hang until they take wing. Others feed in large companies protected by a canopy of silk which they spin, enlarging their tent as they increase in size, and spread over the branches, sometimes covering the whole tree, to the destruction of every green leaf. Some come in countless numbers, and, unprotected, go forth like the simoom of the desert, blasting everything in their path; while others feed in solitude and depart: but all submit to the general laws by which the order is governed. They are all hatched from eggs deposited by a fly—live from three to six weeks in the worm or larva state—change to a chrysalis or cocoon, and then attain their perfect form. When the larva of the butterfly is about to change, it finds a retired nook, suspends itself by a strong silken band at the tail, and another round the body, throws off the outer skin, the under one becoming the puparium or case. The larva of the moth generally spins a silk covering like a ball, to protect itself from the weather, or the attacks of birds and ichneumons (an insect whose larva feeds in the body of the caterpillar, and by whose agency millions are destroyed), while some, like those of the sphinx, creep into the ground to undergo the change; the outer skin becoming the puparium. To this tribe belong the worms which feed on the tomato, the tobacco, and the potatoe; and I suppose the greenish worm with white stripes, described by your correspondent, that "ate holes in the leaves of the cotton plant, and then departed, God knows where." A few well attested facts like these, widely disseminated amongst the planters, might put to flight the thousand wild theories that are now puzzling them, and induce them to adopt some rational mode of arresting the evil. All agree that the worms spin their cocoons on the old cotton plants and neighboring weeds. Then why not make bonfires all over the fields and burn them? Millions would be thus destroyed, which, if suffered to remain, will become moths next year, and do as they have done this summer, devastate the country, unless some unforeseen agency should come to the planter's relief.

I would earnestly recommend to farmers and planters generally, the perusal of a few of the standard works on insects that are to be procured at all the principal towns, such as "History of Insects," Harpers' Family Library—"Insect Transformation," and "Insect Architecture," Library of Entertaining Knowledge; and above all that most fascinating volume of Kirby and Spence on "Entomology," published by Lea and Blanchard, Philadelphia. In these works the reader will find no scientific terms to disgust and tire, but will rise from the perusal a new man, and go forth into the fields perceiving that all is order and beauty and loveliness, and that order is indeed "Heaven's first law." He will find that in their order, insects have an important place assigned them in the economy of nature; and while restrained within due bounds, most nobly do they perform their part.

In the "Old Lady's Diary," I find a sentiment worth remembering: "An evil investigated and understood is half remedied." M.

December 28th, 1846.

HINTS TO AMERICAN FLAX-GROWERS.

THE consumption of foreign flax in Great Britain amounts to something like 70 to 80,000 tons annually, and comprises the growths of Russia, Prussia, Holland, Belgium, and some of the northern provinces of France. The produce of the two first named countries will, on the average of years, range from £28 to £56 sterling, per ton, or say, 6 to 12 cents per lb.; while the produce of the three last named countries and Great Britain, will range from £45 to £80 per ton, or, say, from 10 to 18 cents per lb. The difference between the two being partly owing to inferior climate, but mainly to inferior skill in its preparation for the market. I should remark, however, that while a part of the Baltic flax brings a price as low as £28, by far the greater part will command a higher price, say from £41 to £56 per ton.

Now, how does American flax stand in comparison with this state of things? I am informed that its average range of price is from 6 to 10 cents per lb; thus showing that with climate, soil, and every natural advantage far superior to the most favored countries—America is unable to compete with the worst. I have no hesitation in saying that the fault is with the grower, as I saw 100 tons of American flax the other day possessing all the native essentials of first rate flax, but which bore strong testimony against its growers for their negligence. This parcel had been bought in at the prices I have named.

Now, when we recollect that the market offers cent. per cent., in price as a reward for improvement, surely the attempt to reach it is worth making, more especially when we reflect that if all the difference is not obtained; yet for every step the farmer makes in advance, the markets offer him his

reward, and let me add that granting that cotton may, by its increased consumption, lessen the demand for flax, yet it affects only the lower qualities.

JOHN PARKER.

New York, Dec., 1846.

NEW SEEDLING POTATOES.

IN consequence of the degeneracy of the potatoe and its liability to run out, or at least to become comparatively worthless, I have been experimenting for six years in producing new varieties from seed. From the ravages of a small black bug, my efforts for the first two years proved entirely futile. The third year, by protecting the very small, tender plants with thin bats of tow, for many days after they first sprang from the earth, I succeeded in growing about twenty, which I also protected from the autumnal frosts, as long as they would grow, by means of blankets and boards. From these plants I succeeded in gathering about three quarts of very small tubers, consisting of more than a dozen varieties, all sound and healthy, when dug, most of which remained so until the time of planting the next spring. In consequence of severe frosts and droughts, it was with some difficulty that I succeeded in cultivating them; but I can now say that I have on hand, in my cellar, in good and healthy condition, about 100 bushels of four-year-old seedlings, and about 10 bushels from seeds sown last spring; also a quantity of seed suitable for sowing, from my last summer's crop.

The distinct varieties in the four-year-old seedlings, are now fully developed, the four best of which bear among us the following names:—"Buffalo Pinkeye," "Russeting," "Rose," and "American Producer." During the last two years, I have tested these varieties, and for beauty, solidity, quality, and productiveness, I have never seen nor heard of their equal. The Pinkeye resembles the old potatoe bearing that name, but in every particular is superior. For this variety I was awarded, at the late State Fair at Auburn, the highest premium on seedling potatoes. The Russeting is so called from its resemblance, in color, to the russeting apple or pear. It is very hard and white in the interior, very early, and of the finest quality for the table. The Rose resembles, in appearance, at the seed end, very much the flower after which it is named. The American Producer is rather long, with a rough, though healthy skin, and is remarkably productive. This variety, as well as the rose potatoe, is of fine quality, both for the garden and the table, but is more particularly adapted for field culture and for feeding.

As to the productiveness of these four varieties, I think that ten bushels planted in good soil, with proper culture, will produce in a favorable season, 50 fold. I planted, in a drill, one pinkeye, last spring, making of it, thirteen hills, along side a row of tomatoes, and as I thought, at a proper distance from it; but when both began to spread, the potatoes were badly shaded. The drought and tomato vines entirely destroyed two hills, and very materially injured the whole. Notwithstanding this, I gathered in the fall from the eleven remaining hills, a full half bushel of beautiful Buffalo Pinkeyes.

Among the varieties from which I first gathered my first balls for seed was the long and round pinkeye, mercer, kidney potatoe, orange, large flesh-colored, peach-blow, and several others. The tubers from the seed of the pinkeye have been planted in regular succession three times, with a very perceptible improvement each year. Among these tubers are represented the old pinkeye, mercer, rough-skin, flesh-colored, and peach-blow. The first year from the seed, the tubers were very small; but, during the three succeeding years they have materially improved. The vines are very large at the roots and spread on the ground much like those of the tomato; and while in many fields of the old potatoe, not a seed-ball could be found, they were very large and abundant on my new varieties, bending the stalks to the ground. Among my common pinkeyes, mercers, flesh-colored, English-whites, and orange potatoes, not a single ball could be found, although planted in the same field, at the same time, and in the same drills with my seedlings, with their subsequent culture in all respects alike.

The culture of my seedlings, from the commencement of the experiments, has been but ordinary; yet they have produced abundantly. But the greatest improvement is seen in the seedlings of 1836. Last spring, I sowed in a bed six feet square, about a thimbleful of potatoe seeds which I gathered from my seedlings of the fall previous. When about as large as small cabbage plants, I transplanted into drills prepared for them with a light plow. I set them, one in a place, at a distance of about two feet, and paid particular attention to their culture. The vines were so small when they first sprang up from the soil that they could not be seen at any distance; but at the time of digging they covered the entire surface of the ground, were very bushy, perfectly green, and as large as the round of a common chair. On the roots of some of the plants, I counted from 500 to 1000 tubers, varying from the size of a goose-egg down to that of a squirrel shot. From the crop of the thimbleful of seeds, I gathered about twelve bushels of potatoes, to all appearances perfectly healthy. The greatest weight from one vine was 3½ lbs. Among my young seedlings I expect to find next fall a rich variety strongly marked with purple ground and with white eyes.

I take great pleasure, not only in these interesting experiments, accompanied as they are with entertaining and healthful employment, but in presenting to the public these new products, and at a time too when the whole world is so deeply interested in this subject. It is my intention to give this experiment particular attention for years to come; and should there be any farmers, city gardeners, and others, either at home or abroad, who would like to obtain, next fall, seed from my tubers of 1846, or the tubers themselves, for the purpose of planting or experiment, I shall be happy to supply them on reasonable terms, and thus contribute, not only to the pleasure and benefits of the purchasers in the delightful experiment in their own garden or field, but also in arresting the great calamity now realized in almost every nation on the globe.

N. S. SMITH.

Buffalo, Dec., 28th, 1846.

THE CORN OR FLY-WEEVIL.—No. 1.

THE "Farmers' Cabinet" of the 16th inst., contains a notice of the appearance of a strange insect, which had escaped from some grains of Indian corn, in Germantown, Pa., with a letter from Dr. T. W. Harris, of Harvard University, who states that a similar fact had been observed in Worcester, Mass., and made known to him about two years since; and that it is the same insect that destroys wheat in Virginia, and some of the Southern and Western States, and appeared in the provinces of La Vendée and Angoumois, in the west of France, more than 100 years ago. Being a farmer, and having suffered greatly from the depredations of this insect for many years, I have taken pains to observe its habits, more especially to investigate the conditions most favorable to its development, and the extent of its ravages, the results of which were published in the "Farmers' Register," vol. i., pp. 325 and 463. (*a*)

Several insects, very different in their appearance and habits, are called by the general name of "weevil," which has served much to confuse the prevailing and erroneous opinions concerning them. The insect under consideration, in its perfect state is a moth of a dirty, pale-yellow color, about a third of an inch in length. Its flight is awkward and feeble, and its body is so soft and tender that it is liable to be broken from a very slight cause. The males and females leave their places of concealment in wheat stacks and corn-houses, just after sunset, and their flight abroad, is well marked by the concourse of bats and night-hawks, which are engaged in pursuing and devouring them. (*b*)

In the moth, or perfect state, this insect can do no harm to grain; but in the larva or maggot state, the grain is not only injured by devouring a large proportion of its internal substance, but by remaining for a time, therein enclosed, and finally leaving its excrescent, cast-off skin of the chrysalis, and often, also, the dead moth itself, when the closeness of the bulk of grain prevents its escape. It is manifest that no insect depredation can be more destructive to the value of grain, and that no ravages can be more complete and extensive than where these weevils are very numerous. Where the climate is favorable to their development, and other circumstances are not unfavorable, there is no limit to their destructive effects before every grain of wheat or corn has been made the food and habitation of a disgusting maggot. Such great extent of injury, however, is rarely seen, except under the most favorable circumstances. When Indian corn ripens while the weather continues warm, a few weevil eggs are often deposited on the upper ends of the ears, which protrude from the shuck or husk. These eggs soon hatch and the larvæ gnaw into the grains, and sometimes undergo their transformations in the field, before the coming of frost, which is manifest from the perforations made by the escaped moths. The earliest kinds of corn, of course, are most exposed to the attacks of these insects, and hence are objected to, by some, as being more liable to be weevil-eaten the following year. The eggs which are laid and hatched in autumn on new corn, are too few to cause any appreciable damage, could the further propagation be arrested. But the eggs, and perhaps the insects, in the larva and chrysalis states, if not killed by an unusual severity of cold, will remain torpid during the winter and spring, and do not begin to reproduce before the next summer. In June or July, the first brood of moths comes out in very small numbers; and as the corn is usually stored in ears, in open cribs, it permits their escape from nearly every grain, and likewise a free access to other grains for subsequent laying. Like most of the insect tribes, it may safely be inferred that the fly-weevil lays a considerable number of eggs, and that the progress of her progeny is very rapid from the egg to the moth. I found that the several stages were passed through from September 2d, to October 6th; and in the hotter weather in August, the time probably would not have been so long by one-half. In the climate of lower Virginia, it may be supposed that there are at least five successive generations from June to October. In this manner, their propagation, if not prevented by some means of destruction, would be in geometrical progression, increasing by a very large ratio; and their number, at the end of a few generations, might increase to an extent that would at first seem almost incredible. For instance, let us suppose the eggs laid by each female to be 200, which is not an extravagant supposition, and that four generations are produced during the year, exclusive of the parent moth; allowing half the number to be males, and consequently not counted, and the result would be as follows:—The second generation of females would be 100; the third, 10,000; the fourth, 1,000,000; and the fifth, 100,000,000. By adding to these 100,000,000 males, the whole number of the fifth generation would amount to 200,000,000! The enormous magnitude of this number may be better conceived when I state there are not so many grains of corn in 1,100 bushels!

If, then, this weevil is thus increased in rapid and successive generations, it is obvious that the best and most sure course for prevention is to attack them in the earliest stages of their existence. For the destruction of only one female, of the first brood may cut off the production of 100,000 in after generations, notwithstanding the number destroyed by accident, or enemies, which they naturally have to encounter. Fortunately, however, the prodigious increase of this insect is held in check by its frail tenure of life, and its great increase may be as easily restrained by care and judgment, as it is extended and rendered ruinous by inattention and neglect; and this I propose to show in a future number. EDMUND RUFFIN.

Marlbourne, Va., Nov. 29th, 1846.

(*a*) In the year 1768, Colonel Landon Carter, of Sabine Hall, Va., communicated to the American Philosophical Society at Philadelphia, some interesting "Observations concerning the fly-weevil that destroys wheat," which were published in the first volume of the transactions of that Society, followed by some interesting remarks on the subject by the committee on husbandry. The same insect has also been known for more than forty years

in Maine, New Hampshire, and probably all the New England States.

(*b*) The following particulars concerning this insect were compiled by Dr. Harris, chiefly from Réaumur's "Mémoires," and from a work by Duhamel du Monceau and Tillet, who were commissioned by the Academy of Sciences of Paris, in the year 1760, to inquire into the nature of the insect, on account of its ravages in Angoumoise, a part of France where it had long been known, and had multiplied to an alarming extent. The Angoumois moth, or *Anacampsis cerealella*, in its perfected state, is a four-winged insect, about three-eighths of an inch long, when its wings are shut. It has a pair of tapering curved feelers, turned over its head. Its upper wings are narrow, of a light brown color, without spots, and have the lustre of satin; they cover the body horizontally above, but droop a little at the sides. The lower wings and the rest of the body are ash-colored. This moth lays its eggs, which vary in number from sixty to ninety, in clusters, on the ears of wheat, rye, and barley, most often while these plants are growing in the field, and the ears are young and tender; sometimes also on stored grain in the autumn. Hence it appears that they breed twice a year; the insects from the eggs laid in the early part of summer, coming to perfection and providing for another brood of moth-worms in the autumn. The little worm-like caterpillars, as soon as they are hatched, disperse, and each one selects a single grain, into which it burrows immediately at the most tender parts, and remains concealed therein after the grain is harvested. It devours the mealy substance within the hull; and this destruction goes on so secretly, that it can only be detected by the softness of the grain or the loss of its weight. When fully grown this caterpillar is not more than one-fifth of an inch long. It is of a white color, with brownish head; and it has six small jointed legs, and ten extremely small wart-like proplegs. Duhamel has represented it as having two little horns just behind the head, and two short bristles at the end of its tapering body. Having eaten out the heart of the grain, which is enough for all its wants, it spins a silken web or curtain to divide the hollow, lengthwise, into two unequal parts, the smaller containing the rejected fragments of its food, and the larger cavity serving instead of a cocoon, wherein the insect undergoes its transformations. Before turning to a chrysalis it gnaws a small hole nearly or quite through the hull, and sometimes also through the chaffy covering of the grain, through which it can make its escape easily when it becomes a winged moth. The insects of the first, or summer brood, come to maturity in about three weeks, remain but a short time in the chrysalis state, and turn to winged moths in the autumn, and at this time may be found, in the evening, in great numbers, laying their eggs on the grain stored in barns and granaries. The moth-worms of the second brood remain in the grain through the winter, and do not change to winged insects till the following summer, when they come out, fly into the fields in the night, and lay their eggs on the young ears of the growing corn. When damaged grain is sown it comes up very thin; the infected kernels never sprout, but the insects lodged in them, remain alive, finish their transformations in the field, and in due time come out of the ground in the winged form.

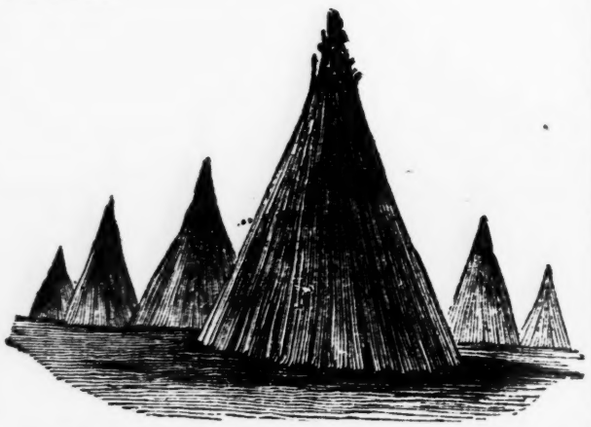
BRITISH AND IRISH FLAX CULTURE.—No. 4.

Steeping.—Mr. Henderson, of the county of Derry, stated that, flax is subject to injury from neglect, in every process, but *in this especially.* The water brought to the pond should be pure from all mineral substances, clean and clear. The water of large rivers is generally to be preferred, but spring water, which has run some hundred yards, becomes soft, and will have deposited any mineral impurities it contained. Immediately from the spring, it seldom does well. If the water be good and soft, it is injurious to allow it to stagnate in the pond, before steeping. I put in two layers, each somewhat sloped, with the root end of each downwards; one layer is said to be safer, and perhaps is so, though I have tried both, and see no difference. It should be placed rather loose than crowded in the pond, and laid carefully, straight and regular. Having an abundant supply of water, I do not let it into the pond till the first layer is in. I cover with moss sods (from the turf banks), laid *perfectly close;* the sheer of each fitted to the other. Thus covered, it never sinks to the bottom, nor is it affected by air or light. It is generally watered in 11 to 13 days. A good stream should, if possible, always pass over the pond; it carries off impurities, and does not at all impede due fermentation —flood and all impure water should be carefully kept off. The Dutch test of being sufficiently watered is certain and perfect, at least I never found it otherwise. It is this:—Try some stalks of average fineness, by breaking the woody part in two places about three inches apart, at the middle of the length; catch the wood at the lower end, and if it will pull out (downward) for those three inches, freely, without breaking or tearing the fibre, it is ready to take out. This trial should be made every day, after fermentation subsides, for sometimes the change is rapid. Flax is more frequently injured by too little than too much of the water. Great care and neatness are necessary in taking out. Broken or crumpled flax will never reach the market. Spread the day it is taken out, unless it is *heavy* rain—light rain does little harm; but in any case, spread the next day, for it will heat in the pile, and that heating is destructive.

The only real difficulty in steeping flax in Britain and Ireland, has arisen from the want of suitable steeping accommodation; and consequently, much flax has been injured both in color and quantity—a difficulty which the Belgians obviate by sending their flax to places adapted to this particular branch of the business; distance to them being immaterial compared to the advantages derived.

The water of the river Lys, to the extent of many miles along its banks, is the most celebrated depository for flax. Steeping is, to hundreds of men, a regular trade. Two, or more, unite in the possession of a number of crates, adapted to a given expanse of water, for which they pay no rent, and are protected by government from the interference

of shipping. The crates are about twelve feet long, eight wide, and three deep. They are simply constructed, and made of common poles. One of my men, Savine Fieuss, was a joint owner of thirty-five. He says that farmers send their flax as far as forty miles by land to be steeped; some, by water, from Holland, even much longer distances. The sheaves, tied with double, and often with triple bands, are placed erect in the crates. The root-ends of one-half of a sheaf are tied to the boll-ends of the other, in order to make the bundle even and convenient for stowage in the crate, which, when filled, is floated into deep water, and sunk with stones to about six inches below the surface. After a short time some of the stones are removed to prevent the crate from touching the bottom of the river.



BUNDLES OF FLAX DRAINING.—FIG. 10.

When ready to be removed, the bundles are placed upon the bank, a few hours, to drain. Afterwards they are untied, and formed into what are called caps, not unlike soldiers' tents. The rapidity with which this operation is performed is perfectly astonishing; for in a few minutes a whole field will assume the appearance of a Lilliputian camp. By this means the stalks are quickly dried, collected into bundles, and sent home. Where the process of bleaching or grassing is conducted by the owner at his leisure—that is to say, if not convenient to prepare the flax for market immediately, —it is carefully stacked till the following spring, a delay that considerably enhances its value, particularly with respect to color. On these accounts the system of steeping flax one year and of grassing it the next, is now extensively adopted in those parts. I had some flax steeped in water, approved by the Belgians, several miles from my own house, according to the above plan; and found in this, as in every other department, the superiority of their practice.—*Condensed from Warnes' Treatise.*

TEST FOR COPPER IN FOOD OR CONFECTIONERY.—Pour over the substance to be tested a small quantity of liquid ammonia (hartshorn water), and if copper be present it will speedily acquire a bluish tint.

TO REVIVE OLD WRITING.—Boil nut-galls in wine, and with a sponge wash over the writing to be restored and copy immediately, as the paper will soon decay.

Mr. Norton's Letters.—No. 2.

SINCE my last letter to you, I have hastily passed over a large portion of England and Scotland, besides portions of Belgium and Holland. One of the most interesting day's travel I have had, was from London to Dover, a distance of 87 miles, through one of the most beautiful parts of England; each turn, and each embankment of the railway, opens some delightful landscape. I was accompanied by Professor Johnston, and derived much instruction from his knowledge of the general features and geological formations of the country.

For nearly 20 miles after leaving London, we were upon the London and plastic clays. The London is an exceedingly stiff, dark-colored clay, forming beds of from 200 to 500 feet in thickness, over a large part of several counties. It forms an extremely difficult soil to cultivate, and hence a very considerable portion of it is left in permanent pasture; in some places very fine, in others cold and wet. Thorough draining and judicious management cause it to produce remarkably fine crops of wheat and beans; and where sand can be procured, it is converted into a fertile loam of excellent quality.

The plastic clay is under the London clay, and comes up all around it, having a thickness of from 300 to 400 feet. It consists of alternating beds of clay and sand. This structure of the formation causes it to present soils of entirely diverse qualities, as the different beds of clay and sand come to the surface, and this often within a very short distance. Neither of these clays can, as a whole, be described as well cultivated. The fields are in a majority of cases wet or ill-drained, and the grass, therefore, not so fine as it ought to be. Where the soil is well cultivated, and thoroughly dried, the crops are remarkably fine. Draining is progressing quite fast. We saw many fields undergoing the process in a thorough and complete manner. The small pipe tile, having a bore from one to one and a half inches in diameter, for the ordinary drains, seems entirely to have superseded all other kinds. Of course the diameter of the bore is greater for the leading drains.

These stiff clayey soils are difficult to manage, but are of great strength, and when judiciously treated, are productive, being deep and almost inexhaustible. They belong to what are called by geologists, the tertiary strata, characterized according to Professor Johnston, by containing among other fossils, the remains of animals identical with existing species.

Just before reaching Reigate, we crossed a narrow belt of the chalk formation, belonging to the secondary strata, which contain no animal remains that can be identified with existing species. The chalk covers a very large area in the south-eastern part of the island of Great Britain, being in thickness about 600 feet. Some parts of it contain layers of flint, especially the upper beds; and in many places, beds of marl (chalk-marl) occur. The different layers of chalk produce somewhat different soils, but the general nature of them is the same. The upper chalk, however, is generally the poorest, and in many places, the chalk for the lower beds is applied on the upper with very great

advantage. It is a singular thing to see chalk brought sometimes many miles and laid down in heaps upon the land, where other chalk is perhaps not more than six or eight inches from the surface. It is, in fact, probable that in many cases, chalk is brought from a distance, not at all superior to that which a furrow a few inches deeper than usual, would turn up. The farmers of this kind of land, frequently, and perhaps generally, have a great horror of turning up any chalk. I have seen instances where there was not more than six inches of soil above the chalk, and the plowmen were carefully avoiding the making of a furrow more than four inches deep. Some analyses of such soils, made in Professor Johnston's laboratory in Edinburgh, have shown that by this system of skimming the surface year after year, the surface soil may actually become deficient in lime, which at the same time exists in the condition of chalk, not three inches below the plow. It is strange that men can thus go on from year to year, and generation to generation, doing as their fathers have done, and not bestowing a thought upon improvement. Among other old customs which we noticed in this neighborhood, was that of plowing with horses fastened one in front of the other. Plowing as shallow as many of them do, there would seem to be nothing required beyond the strength of *one* of their great horses; but the employment of *four* is not uncommon. I saw one plow drawn by four horses, with one man to hold the plow, and a man and a boy to drive. All of this mighty array produced a rather narrow furrow, about six inches in depth.

I must observe, however, that in all cases it would not be advisable to bring up the chalk from the subsoil, as many of the upper beds are only productive of a short and scanty herbage. No rigorous chemical examination has yet been made, to show us why it is that one kind of chalk is so much better than another. This would be an interesting and useful inquiry.

At Reigate, we came upon the green sand, a formation about 500 feet in thickness, which appears at the edge of the chalk, forming a belt around it. The upper beds of this green sand, according to Professor Johnston, are everywhere productive, and form some of the finest soils in the kingdom. They are deep, friable, and easily cultivated. Some of the middle and lower beds of the same formation produce cold, unmanageable soils, perfectly discouraging to the farmer. Where we passed, no such soils as these last were visible, everything appeared rich and flourishing. The crops looked well, without exception, and many were even luxuriant. I do not mean to say that the farming of this beautiful district is perfect, for many a wet, rushy field testifies to the contrary; yet taken as a whole, all appears almost without defect; a closer inspection only, reveals the faults.

An account of the remainder of this journey I must defer until another opportunity.

JOHN P. NORTON.

Utrecht, Holland, November 18th, 1846.

TO SOFTEN AND REMOVE PUTTY.—Put a little [illegible] acid, or a little strong vinegar, and spread over the putty, and it will soon become soft.

POPULAR ERRORS.—No. 3.

WHILE the public press is loud in denouncing the political and religious errors that corrupt the bosom of society, it is too apt to overlook lesser ones, which have consequently remained in full force, and acted as formidable barriers to the advancement of truth. These have been handed down from father to son, from time immemorial, until their very antiquity has invested them with a garb of sanctity. How strange that the extinction of "Salem Witchcraft" did not involve with it that of other fantasies equally ridiculous and absurd, though, perhaps, less pernicious! With what supreme contempt we regard the follies of former times, and how severely do we reprimand the superstitions of our forefathers, while we obstinately cherish and cling to others which may as justly expose *us* to ridicule and contempt!

> "We think our fathers fools, so wise we grow,
> Our wiser sons no doubt will think us so."

The moon has ever been a most prolific subject for the origin of absurd theories; for example, witness the following. When the appearance of her crescent is such that a kettle might be suspended on it without sliding off, dry weather will ensue; root crops must be planted when she is passing from her juvenile state to that of maidenhood or maturity; but with other crops the opposite rule must be observed. Her passage from one sign of the zodiac to another, influences both animal and vegetable life. Cucumbers planted when the sign is in the *twins* (Gemini), will grow in *pairs*, and if a calf be taken from its doting parent when the sign is in the heart, the bereaved mother will mourn long and loud for her offspring.

Such are a few of the ludicrous absurdities connected with the moon, and these are suffered to exist, and are in fact sanctioned by those who ought to be foremost in putting them down. How many almanacs do we see issued in this enlightened age, having for a frontispiece a grotesque picture of the human body, surrounded by characters representing the constellations of the zodiac, all of which are entirely imaginary, and were formed in accordance with the superstitious notions of ancient pagan nations. Thus we, who profess to be enlightened Christians, show a reverential deference to heathen doctrines, by acknowledging the agency of the deities which they enthroned among the stars. It is to be hoped that the light of education and reason will ere long dispel these clouds of ignorance, and that a brighter day will dawn upon us.

Greenport, Dec. 26th, 1846. J. McK.

MEETING OF AMERICAN WOOL-GROWERS.—A meeting of wool-growers will be held at Steubenville, Ohio, on Wednesday, the 10th instant, at which it is hoped every wool-growing county in the Union will be fairly represented. As many persons, intelligent, and well informed to be prepared to [illegible] important branch of business, so will be given, and extensive arrangements be made for the better management of growth and trade, wool-growers of every description, who can conveniently attend will find it for their interest to be present.

THE HORSE.—No. 2.

The Anatomy of the Bones.

a, *b*, *c*, *d*, *e*, *f*, the head.

a, the under jaw.

b, the upper jaw; near the letter is a hole for the passage of the nerves and blood vessels from the brain to supply the lower part of the face.

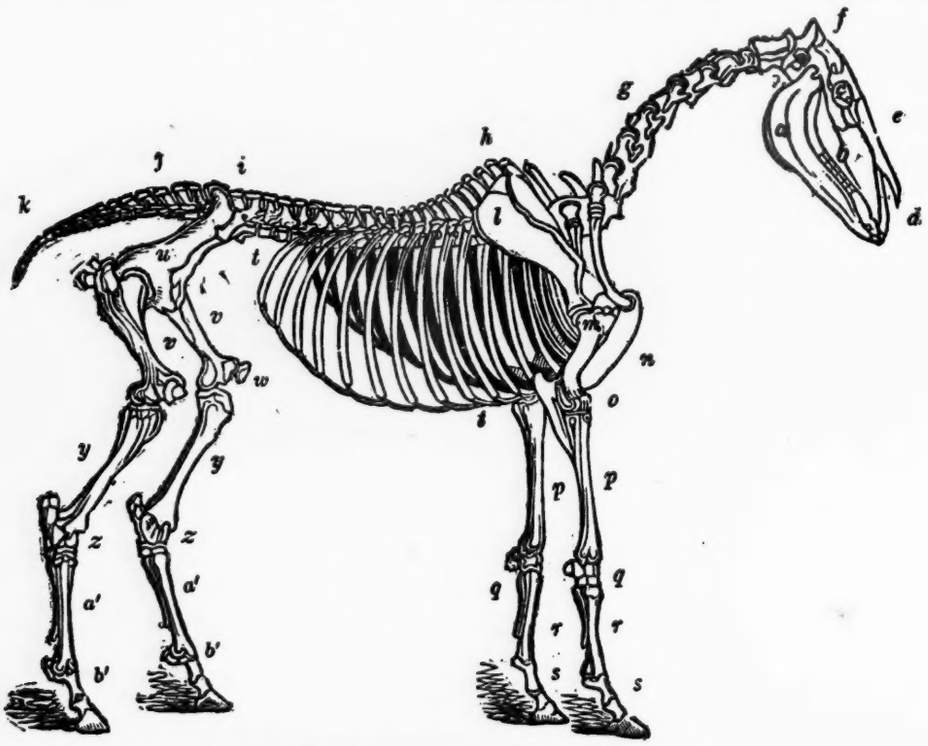
c, the orbit, or socket of the eye.

d, the low part of the upper jaw, containing the upper nipper teeth. On the opposite side is the lower part of the under jaw, containing the under nipper teeth. The lower part of the upper jaw in quadrupeds is a separate bone, that is, the upper jaw consists of two parts, the upper and lower, with the nipper teeth in the lower, and the grinder teeth in the upper.

e, the bones of the nose.

f, the top of the head, or bone dividing the wall bones of the head from the bones of the back of the head. There are, besides, in the head, a number of bones, not seen in the cut, or seen only in part. They are the frontal bones; the bones of the walls of the skull; the bones of the temples; the bones of the arch above the eye; the bones of the pit above the eye; the bone of the back part of the head; the bones for the passage of tears from the eye to the nose; the cheek bones; the bones of the nose; the bones of the palate; the bone dividing the two portions of the brain; the base of the bone of the back part of the head; the wedge bone; the sieve bone; the spongy bones of the cavity of the nose; the bone of the tongue; and in a five year old horse, forty teeth, twelve nippers above and below, four tushes above and below, and twenty-four grinders above and below; the mare generally lacks the tushes.

This complication of the bones of the head (in-



The Skeleton.—Fig. 11.

finitely greater than in any other part) has a varied object; the jaws are levers, the front teeth knives to cut, and the grinder or back teeth mill-stones to grind to pulp, and thus prepare the food for the stomach. The bones of the upper part of the head are necessary to shield and protect the brain and organs of sensation there, especially hearing and seeing; hence the brain is covered by an arch (which is the strongest form of protection), and the eye by arched and projecting sockets for the same reason. The head is liable to blows, and concussion of the brain would be fatal; therefore the large tailing pr[illegible] bones, many of them joined by dove-opening, and rem[illegible] yield on pressure, closing and fractured. The arch or roof of the brain consists of two plates, the outer one hard and dovetailed, which resists all pressure and blows; and the inner one elastic, to yield and prevent pressure on the brain. Thus the vibration of blows and all shocks are prevented, unless from a force so great as to overcome all these means of resistance; but this rarely occurs.

g, *h*, *i*, *j*, *k*, the spine or back bone.

g, the bones of the neck, seven in number.

h, the withers; *h* to *i*, the bones of the withers and the bones of the back, eighteen in number. The wither bones rise from the spine; the first but little, the second more and runs back, the third and fourth more, and the fifth most; then decline to the level of the back at the twelfth.

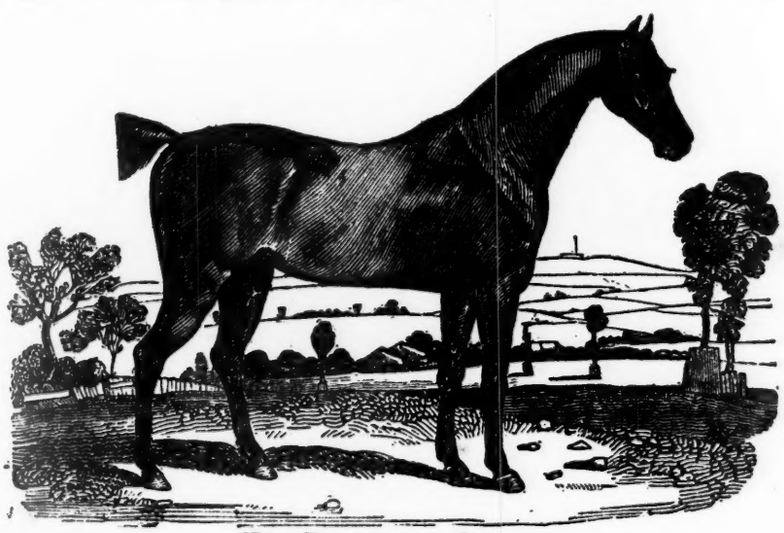
i, the bones of the loins, six in number.

j, bones of the spine, which are included in the haunch, five in number.

k, the bones of the tail; varying in number, but generally about fifteen.

of a wonderfully [illegible] of the horse is composed [illegible] bones. The [illegible] are not united directly the one to the other; that

they been, this would have subjected the back to dangerous shocks. These bones are united with each other by cartilage or gristle, and are bound all together in a column by strong ligaments. Any two of these bones united by cartilage constitute a joint, with a small power of motion only. Yet while any one joint possesses but a small power of motion, the back has in its whole length a great one, and hence possesses great strength and flexibility. The ribs form joints with the bones of the back, and are received into the cartilage between the different bones of the back. So strong is this cartilaginous union of the bones of the back with each other, and of the ribs with the spine, that in case of injury, the bones and ribs will be broken sooner than the cartilage will give way. The spine, in the part called the back, is composed of twenty-three bones, viz. eighteen composing the back proper, and five the loins. On this part of the animal the weight is placed, and ease of carriage and strength are necessary. If the back were stiff and unyielding the motion of the animal would be intolerable from the greatness of the jar; if it were very flexible it would be weak. It is hence greatly flexible as a whole, yet but little so in any small section of it. Strength and ease being both necessary, are accomplished in this way; viz. the bones are united together with peculiar firmness; the round head of one is exactly fitted to the socket of the one immediately before it in the column of the back; and between them is placed the elastic ligamentous cartilage or gristle. There are ligaments running along the broad surface of these back bones on the under side. There are horizontal projections, or spurs, on these bones; along these run ligaments; there are upright spurs to the bones, and along these run ligaments; and in addition, the pack-wax of the neck extends along the whole course of the back and loins. These ligaments are inserted into the various muscles at their end and along their course, and contract and expand as the motions of the animal render necessary. This whole combination makes a back of great strength and flexibility, capable of sustaining a great weight, without those shocks or jars to the rider which would be fatal to the horse himself if the back were un-



THE ROADSTER.—FIG. 12.

yielding. Yet even these ligaments, with all their power, may be ruined, by over weight, too violent exercise, or too sudden pulling up on the haunches to arrest motion. In such case, they inflame and are changed to bone, and the joints cease to exist, and the back is one solid column of bone. Most of badly used old horses have stiff backs, more or less from this cause; they are unpleasant to ride, lie down and turn with difficulty, and straddle in moving.

l, the shoulder blade.

m, the upper bone of the arm, or lower part of the shoulder.

n, the fore part of the chest; or the breast and breast bone, consisting of seven to nine bones.

o, the elbow; the rear of the elbow is called the point of the elbow, or point of the arm.

p p, the under bone of each arm.

q q, the knees of each fore leg, consisting of seven bones; six of which are interposed between the lower end or head of the under bone of the arm and the upper ends or the heads of the bones of the leg below the knee; the seventh is placed behind the other six, and bears no weight, but is a point of attachment for two muscles, concerned in the backward bending or contraction of the whole leg. These seven bones, and the heads of the arm and shank bone, are all covered with a thick elastic cartilage, or gristle, to facilitate action and prevent too much jar. The whole joint, consisting of all the bones, is bound together firmly by ligaments.

r r, the larger cannon or shank bone in front, and the smaller or splent bone behind, of each fore leg.

s s, the fore pastern and foot; consisting of the upper pastern bone, with some bones behind (similar to the bones of the knees), making the joint of the upper pastern with the shank bone; the lower pastern bone; the coffin bone; the shuttle bone (not seen), joining with the lower pastern and coffin bone.

t t, the ribs; seven or eight joining on to the breast bone, and called the true ribs; and ten or eleven united together by cartilage or gristle, called the false ribs.

u, the haunch; consisting of three parts, called by surgeons the ilium, the ischium, or hip bone,

and the pubis; in common language we have no names for these parts; the points of the ilium are prominent, and are called the hips.

v v, the thigh bones of each leg; called also round bones.

w, the stifle joint, with the stifle bone, which is similar to the knee pan in man. On to the stifle bone are attached some of the tendons of very powerful muscles. The stifle joint is the union of the thigh bone with the leg, or lower thigh bone; and the union is made very strong by ligaments.

y y, leg bones; called lower or second thigh bones; behind is a small bone called the splinter-bone.

z z, the hock, composed of six bones; the prominent bone is called the point of the hock. These bones are like those of the knee, and are in a similar way bound together.

a' a', cannon or shank bones of the hind legs.

b' b', pasterns and feet of hind legs, same as in the front leg.

MASTODON COTTON.—No. 1.

THE introduction of this variety of cotton into the United States forms a new era in their history, and has excited great attention in all the cotton-growing districts. The chief topics of inquiry or examination to which I propose to direct your readers, are as follows:—

Where did the seed come from?—This is not known with certainty, and perhaps never will be. In 1842 a gentleman who is not known to the writer, and who had recently been in Mexico and California, left *three seeds* in rather a careless manner in this place, with one of my neighbors. The circumstance became known to me, and I carefully preserved a portion of their product. From this beginning has grown the "MASTODON COTTON" in the United States. Not all that is *called* by that name, but all that is genuine. I might here remark that for many years I had been endeavoring to obtain *a better seed* than is usually cultivated. I had taken much pains to procure and *try* all new seed I could hear of. I had also spent much time and some expense in crossing, mixing, and proving different kinds of seed; and I had then several different kinds of cotton seed which I had petted a good deal, but have thrown them all away. The name "*Mastodon*" was given it by the writer in consequence of the size of the bolls and stalk.

What are the peculiar properties of the plant and cotton?—The plant when young is stouter and more thrifty in its early growth, the leaf is thicker and the stalk larger. As the plant grows, the stalk becomes very large and the branches very long, with short joints. The foliage is of a somewhat darker green than the common Mexican cotton, and the boll nearly thrice the size, with thicker rind. The cotton, when open, adheres in the boll with sufficient strength to entirely prevent its falling out in the field.

The character and value of the cotton when prepared for market is of much importance. The first that was exhibited in the market in New Orleans sold in December, 1845, at 16 cents per pound, and afterwards, as I understood, in Liverpool at 9d. My private commercial information from Liverpool, on the subject, places it, when well ginned on saw gins, in the usual way, above all other cottons except the higher grades of Sea Island. No attempt has been made that is known to the writer, to gin it in any better mode than on common saw gins somewhat modified. It is confidently believed, however, that if it could be ginned without materially injuring the staple, it would rank with the best Sea Island cotton. Its staple is from *three quarters of an inch* to *two inches and a half* in length. Cotton brokers and merchants speak of it as being remarkably *fine* and *silky*.

I ought to have remarked above, that the product of the Mastodon, especially on dry, thin, or sandy soil, is supposed to be greater than that of the common Mexican cotton.

How, and on what kind of land is it cultivated? It has been cultivated the present year on all kinds of cotton land in the whole South. The season having been so extremely disastrous, on account of the wet weather and the famous cotton worm, that it has been extremely difficult to make any calculation or estimate upon it; yet it is believed, from experience formerly as well as the present year, that thin, dry land suits it best, comparatively.

In cultivating the Mastodon cotton care should be taken, on rich land, to make and keep the ridge high, otherwise it may continue to grow too long in the season. There should be a less quantity of plants on a given quantity of land, by about one-fifth; and on rich land, or in wet seasons, it should be *topped* about the last of July. By topping I mean to break out the bud of the main stalk in the centre.

How is it ginned?—As has already been intimated, it has never been ginned without material injury, so far as I know. The saw gins only have been used, and these greatly injure the staple. The cotton adheres so closely to the seed that it is thought to be impracticable, or at least extremely difficult, to gin it on the rollers used in ginning the Sea Island cotton, though it is understood that efforts are now making to effect this purpose. If that or some similar process could be adopted, for separating the cotton from the seed, it is believed it would enhance its value fifty or a hundred per cent. If the saw gins are used, however, they should be of the very best kind. The grates should be an inch wide, the teeth very fine, the cylinder should have a very slow motion, and the brush great rapidity. R. ABBEY.

Yazoo, Miss., Dec. 3d, 1846

APPLICATION AND GOOD EFFECTS OF GUANO.—Rev. Ansel Downs, of Baiting Hollow, Long Island, speaks in high terms of his success in the application of guano in the culture of Indian corn. In every case where he applied it in the hill or otherwise, the result was a double quantity of produce. He thinks that when the guano is used in an unadulterated state at the time of planting, it should not be applied directly under the seed, but at a distance of two or three inches one side; for when the roots of the corn come in contact with the guano, the plant seems to [illegible] yellow, and in some instances die. This mode appears to be in perfect accordance with that practised by the Peruvians.

MANAGEMENT OF HONEY-BEES.—No. 7.

Winter Management.—When fall approaches, it is important to know the exact condition of the bees, in regard to their winter's food; and for this purpose, I recommend that all hives be made of the same size and weight, that the quantity of honey in each may be readily ascertained, after a little practice, in raising them from their positions. There should be found 15 to 20 pounds of honey in every hive, of the usual quantity of bees, in order to carry them safely through the winter. About the first of October, I raise all of my hives, and I can at once perceive whether any are deficient in honey. If the season has been very unfavorable for gathering honey, and I find them rather below the standard weight, generally I adopt the following mode of feeding, being far less trouble than to wait till their stores are consumed, at which time the weather will not generally permit their being fed with any degree of facility. I take a box, or trough, about two feet long, six inches wide, and four inches deep, into which I place my honey; I then set a floating cover upon it, made of thin, light wood. This cover is sawed lengthwise as many times as a saw can be made to pass through easily. One end of this cover is kept entire, and upon the other end a bracket is placed to keep the strips in their proper position. The honey passes up through the channels, and the bees take it from the bars with great facility, being in a position perfectly free from sticking in the contents, and they are enabled to take away the whole contents of the trough, without any attention after filling it. Care should be taken to supply the honey before cold weather sets in, and at such times as the bees are out in great numbers. The honey afforded in this way is stored up in the same manner as that gathered from flowers. I have had a gallon and a half taken away in a single day by three stocks only. I buy southern honey, at from 50 to 60 cents per gallon, a gallon weighing 12 pounds; hence, a stock of bees may at any time be saved from famine, for one-tenth of its value. Where honey cannot be readily obtained, common brown sugar will do just as well. Dissolve it with sufficient water to make it of the consistency of honey. This must be done over a fire, and taken off at the boiling point, and the scum taken off.

When a single stock, or more, or a late swarm that has not been able to lay up a winter's store, is to be fed, it must be done in a way that will not attract other bees. And I will here add, that in all cases where a majority of the hives are of light weight, it is much better to feed the *whole* colony than to attempt to save any part of their food, by feeding separately such only as absolutely require it. The difference will be returned in the supers the next season. To attempt to feed bees in cold weather, in the usual manner, at the bottom of the hives, is a great vexation; and the art of feeding them in a proper manner is so little understood, that many people leave their bees to their fate, rather than attempt to rescue them. I will give an instance of feeding a late swarm, which will serve for all cases of separate feeding from the general colony; but in order to feed on this principle, the hives must be made with supers, on my plan, or any way in which a superstructure is made for the bees to enter.

About four years ago I had a late swarm that had laid up no honey at all, and constructed combs in one corner of the hive only. I took out the door of the super, turned the hive round to the south, and then placed a temporary door to the super, with a pane of glass in it. After the boxes belonging to it were removed, I placed a very small tin pan in their place, filled with honey, and covered with a floating cover after the manner of feeding as before mentioned, with the difference that this cover was filled full of small holes, from which the bees took the honey. These bees were active the whole winter when the sun shone, but barely attempted to leave the hive, their whole operations being confined to the super. The air was admitted freely at the bottom, and the weather was very severe, the thermometer being down to zero frequently. This hive was placed in a cold situation, and there being so few bees in the hive shows conclusively that bees will stand any weather, however cold, if in a right condition. There are instances in which bees are found dead, with an abundance of honey in the hives; but they do not *freeze* to death, but *starve* to death; for this reason, that the bees are unable to change their position, in order to get food in a different section of the hive, owing to the dormant state in which the weather places them, and they die of famine. Had a sufficient supply of honey been within their reach, they would have withstood any degree of cold. Strong stocks are not subject to such a death.

In cases where fall feeding has been omitted, it may be safely done, in a general manner, in the winter season, provided that the weather be very mild, and the bees come forth in large numbers. If the weather will not permit of feeding, and if there be no supers to the hives, they must be left till the first warm spring weather, and if they survive up to this period they will probably do well.

Another important consideration is, to so place the bees that they will have the least possible desire to leave their hives during the winter. If two stocks of bees should be placed side by side, and the one so managed that the bees should remain within, constantly, without being confined, while those of the other should be on the wing during every tolerably warm day, the mortality of the bees remaining within would not be half so great as that of the other; for the reason, that thousands of bees come to an untimely death, in the winter season, by being suddenly chilled while abroad, and never regain the hive. Hives thus depopulated cannot possibly thrive so well in the following spring, as those which are kept from going abroad; hence it follows, that to be successful we must pursue that course which will cause the bees to remain within the hives, if we can without imprisonment, as that often proves more fatal than to suffer them to go abroad.

T. B. MINER.

Ravenswood, January, 1847.

WEATHER PREDICTIONS.—At present I feel entitled to deduce from the sum of my investigations this capital consequence:—Never, whatever may be the progress of the sciences, will the *savant*, who is conscientious and careful of his reputation, speculate on a prediction of the weather.—*Arago.*

LETTERS FROM THE SOUTH.—No. 3.

THE surface of the country from Virginia to Georgia, inclusive of a portion of each of these states, may be generally classed under three well-defined divisions. The first, lying on the seaboard, is low, level, and sandy; the middle is much higher, with a rolling surface, and some hills; while in the third or western, these hills become more elevated and abrupt, and finally pass into the mountainous ridges, which form the continuation of the Allegany and Blue Ridge. The first consists almost entirely of sand; the second of sand or gravel, frequently of loam, and occasionally of clay. Stone sometimes, though rarely, abounds. Except in some of the islands on the coasts bordering on South Carolina, Georgia, and the river bottoms, both of which are rich alluvial deposites, and as inexhaustible as lands can be under cultivation; the soil in these divisions is generally light, and requires frequent manuring, or prolonged rest, to yield good crops. Vast quantities of it have never been brought into cultivation, and from its extreme sterility, will probably remain untouched till the tide of emigration, which is now rushing with so much strength through the territories of Oregon and California to the shores of the Pacific, shall have met this impassable barrier, when it will be turned back upon itself, and again set towards the Atlantic. They are all covered with a medium growth of natural forests, and furnish lumber and fuel for the inhabitants; and frequently, in addition to these, large quantities of tar, pitch, and turpentine for exportation.

Most of the islands north of Charleston are barren sand-banks, covered in many instances with a light growth of stunted pines or shrub oaks. The rich islands, near and south of this city, are generally healthy. They are densely covered with an agricultural population, whose principal staples are sea-island cotton, and farther south, some sugar; while corn, sweet potatoes, melons, and the various minor products of the south are cultivated in all. The impoverishment necessarily consequent in cultivation, is readily arrested by applying the muck found on the inner shores at low water, which is highly charged with the remains of shell-fish and infusoria. These are rich in carbonate of lime, and frequently afford an appreciable amount of the phosphates, so valuable in manures. These lands, from their fertility, accessibility, and general healthfulness, are held at high prices, and can seldom be bought under $100 per acre. The choicest kinds of sea-island cotton there raised, will sometimes command a dollar per pound, for foreign consumption; and they are engaged for years in advance of production.

The river bottoms are frequently unhealthy, though much less so to the blacks than to the whites. The former, under the direction of overseers, are generally the sole occupants of them during the summer and fall. On such as can be flooded, rice is raised in large quantities, and where every way adapted to its culture. This is by far the most profitable crop raised in the United States. The more elevated bottoms are devoted to corn, and sometimes to cotton. These are raised to some extent on the sandy levels, more especially corn, which yields a light crop of 10 to 25 bushels per acre; but it requires manures or frequent rest to produce even this small quantity. Sweet potatoes and melons are also grown upon them in abundance when well manured. The middle division, embracing the rolling land, is peculiarly the cotton region of these states. Corn is also raised, and generally to the full supply of the plantations. On some there is an excess for exportation, and occasionally it is brought from a distance for consumption. The western division is made up of much poor, and some rich lands, and is productive in all the grains, grasses, flax, roots, &c., and is eminently adapted to wool-raising, as is also much of the middle section.

Augusta is a place of about 8,000 inhabitants, is regularly laid out, and generally well built, on a table land, some 25 to 30 feet above the low water mark of the Savannah which borders upon it. Notwithstanding its elevation, the river sometimes overflows the streets; and for miles it floods the rich alluvial banks, imparting to them that natural fertility which characterizes the elevated plateaus on either side. The town was formerly quite flourishing, and enjoyed an extensive inland trade; but for some years it has been stationary, if not retrograding. The alleged cause of this is the railroad, for at the same time that it runs inland for 150 miles, it runs away from it to the Atlantic, 136. Yet, at Charleston, its tide-water termination, it is denied that they have a corresponding benefit, although in this, I think they are mistaken, as there is some evidence of improvement, and the place is certainly extending its buildings, and adding to its trade and population. Including the suburbs, it now contains nearly 40,000 inhabitants, a majority of whom are blacks.

Savannah is the terminus of another railroad running through the interior of the state, and draws off a part of the trade heretofore enjoyed by Augusta; but it has hitherto derived little increase from it, either in business or population; and the interior of the country along these routes, has certainly not manifested any peculiar developments in consequence of their construction. Most of the Southern railroad stocks have always been much below par, and paid little if anything in the shape of dividends. The utilitarian will naturally inquire what benefit has followed the outlay of so much capital? Much in various ways, though little in the manner that was anticipated by the stockholders. They have greatly facilitated intercourse between remote points, and at much cheaper rates, and passengers and products can now readily pass over great distances, not only with less outlay of money, but also with great economy of time, and entirely independent of bad roads and weather; and when markets are high on the seaboard, the planters can rush in their entire produce and obtain the highest rates.

It is truly enough said, that railroads principally benefit the extremities; but here is Augusta, at the head of steamboat navigation, which it has positively injured, and their influence is scarcely perceptible in favor of Charleston and Savannah, where transhipments are made upon tide-water. The planter and the agriculturist of the interior, it has certainly benefited; then why are their good

effects imperceptible at the other extremity? It must be candidly answered, that it is no fault of the road, but of the citizens. The *principle* is still as good as ever, but the *practice* destroys most of its beneficial effects. Augusta fails to arrest the legitimate benefits of the road, and allows them to accumulate in Charleston; while Savannah, and the latter place, from the same neglect, allow Baltimore, Philadelphia, New York, and Boston, to become the real termini of the roads, by rendering themselves the head-quarters of supply and demand. The corrective of this evidently rests in measurably changing the habits and employment of the people. There are comparatively few producers there as mechanics and manufacturers; and the raw materials pass on and on, till arrested by consumers, who return a full equivalent in the various manufactured articles, which are the result of this consumption. It is only when the circling eddies meet that the fertile deposites are formed, while the rushing turbid stream leaves no traces of its enriching qualities. Mechanics and manufacturers are indispensable to give growth, stability, and wealth to any place or country, and this, be it known, is of vastly more consequence to the agriculturist, the tiller of the soil, than to the artisan. The latter may move his capital, his labor, and his work-shop, wherever they can most advantageously be employed; while the former must cultivate his acres where they lie, or abandon them. If there is a dense and flourishing population near him, otherwise profitably employed, to consume his products, the latter will return him large and satisfactory prices, if surrounded only with competitors, or idle non-producers, who have not the wherewithal to purchase his harvests, they can yield him only a lean compensation. Neither Augusta nor Savannah ever had many surplus mechanics, and comparatively no manufacturers; and from Charleston some 300 or 400 have within a few years emigrated to the north and west, where they can follow their legitimate pursuits, under those advantages which are elsewhere afforded. It is not necessary to specify what these are—every intelligent man can perceive them at a glance.

What has built up the four principal cities before enumerated, Pittsburg, Cincinnati, Louisville, and others, and with so much benefit to the farmers scattered far and near? Commerce has done much, it is true, for their growth and support; but commerce has indicated where mechanics and manufacturers should concentrate their operations, and aided them by her presence, rather than accumulated this large population and wealth by her unassisted efforts. Egypt had commerce, wealth, and population, but she had agriculture and manufactures too, and in the highest state of perfection. Tyre and Sidon, once eminent for wealth, employed no small part of their densely crowded populace in the fabrication of linen, silk, wool, and the metals. Their descendants, the Carthaginians, though they enjoyed almost a monopoly of commerce and piracy (for the two were nearly synonymous terms among the ancients), brought crude tin, and copper, from the mines of England, and the latter metal and other raw materials, from various countries, to employ her artisans, and sustain the various arts they derived from their ancestors. Rome, her proud rival and conqueror, while plundering the globe of its accumulated wealth, plundered it of its mechanic arts, too, or she must have relapsed into impotency or barbarism in half a century after her successful robbery.

New Orleans and St. Louis are the only exceptions on this continent, to the union of trade and commerce with the mechanic arts, where growth and wealth have been rapidly accumulated; and they are a thousand miles apart, and without rivals in the trade of an agricultural region, to which, both for extent and fertility, the world has no parallel. It has been often said, that the "Old Thirteen" is but the list, the mere selvage, to the broad rich fabric that lies west of the mountains; yet scanty and penurious as is the soil, what an augmentation of wealth, population, and resources, has the union of the mechanic arts with their well suited agricultural labors, given to the middle and northern portion of them; and what has been realized there, the adoption of the same policy will measurably achieve for the south-west. These remarks are intended exclusively for the advancement of agricultural interests, and as indicating the true policy for the farmer to adopt to secure the highest reward for his labor.

The road from Augusta westwardly was in the rolling country, and for the first hundred miles did not come under observation, as we passed it in the night, but I was told it did not vary materially from our subsequent route. Daylight found us passing through interminable woods, principally oak, with some chestnuts, hickory, and now and then patches of pine. At Notasulga, a new place of a dozen houses, and three or four stores, 136 miles from Augusta, we left the cars for stages, which took us 130 miles to Atlanta, a place of equal size and importance, where we again took the cars for Montgomery, 50 miles. This is the principal head of steamboat navigation on the Alabama, and recently made the capital of the state. The town is regularly laid out, on the left bank of the river, and elevated some sixty feet above it; and enjoys a large trade with the surrounding planters, who make this the depôt for shipping their cotton. It contains some 3,000 inhabitants. Wetumpka, 50 miles higher up, by the river, but only 16 or 18 by land, contains about 2,000 people, and is the extreme head of navigation for boats of the lightest draught.

The whole country through which we passed from Augusta to this place, is as dull and deficient in interest as the most misanthropic could desire. It was sufficiently rolling, sometimes stony, and had numerous clear rivulets meandering on it. But the *improvements* were mostly a sad blotch on nature. It is bad enough to find log shanties, slip-shod fences, etceteras, in a decidedly fresh, and untamed country; but to see these, so old as to be already in their dotage, and comparatively little to redeem the general forbiddingness of the scene, is, to say the best, the reverse of gratification to a traveller. The log houses on their best estates, consist of a room at either end, with a passage between (but seldom enclosed with doors), through which a loaded team could be driven, and the enclosed rooms would

generally afford a tolerably distinct view of the opposite scenery through the *unchunked* double walls. The chimneys in most of the country, and some of the city houses, from Maryland to the Gulf, are placed on the outside of one or both ends, and are built entirely independent of the houses, though connected with the first floor by a single fire-place. This may abate a little of the intense heat of summer; but it has a most unsightly and forbidding appearance. The best houses are sometimes painted, and the chimneys are well laid up in brick and mortar, while those attached to the poorest are more frequently made of mud and sticks, and the surrounding buildings are limited to a rough hovel or two, about as closely housed in, as a field under a well laid worm fence. The *shuck* provided for the winter forage of the cattle, is one or more stacks of corn blades or husks, some 12 or 15 feet high, and 5 or 6 in diameter. A fourth rate Vermont farmer's cattle would consume the winter's stock in a single frosty night, and need baiting early the next morning. The working mules or horses are fed with corn; but all the remainder of the quadrupeds must betake themselves to the woods for browse, or starve. The latter alternative they are sometimes not slow in accepting as the best of the two. Yet as the range is illimitable, and vegetation has a torpid existence through the winter, they will frequently do very well on it, though they have in many cases to go so far for it, that they do not think it worth while returning to report progress till the feed has again become deserving their attention home. Of course, milking the cows is out of the question, unless half of one's time is used in pursuit of them. Where there are *cane brakes*, as is frequently the case on rich bottom lands, the animals have a good winter subsistence on the young shoots of this gigantic grass. Its rich evergreen leaves acquire a palatable nutritiveness after the frosts, which it does not possess during the summer and autumn, and when abundant, cattle will fatten on this alone. The swine through this country are the vilest brutes a farmer's eye ever rested on. They are of all colors, but principally black, grey, red, blue or striped and dotted like a hyena, which comely beast, and its congener, the wolf, they more nearly resemble than any of their own well bred family. Even the fattening porkers are only in a passably growing condition, while the nomads could hardly lay claim to hide enough to hold their bones together. As the stages rattled along, they rushed out of the woods in all directions, to gather up the droppings of the horses, which they followed for miles, if their strength held out, till they could refresh themselves with the savory repast. I asked the driver the cause of their leanness when the woods were full of oaks and chestnuts. He said the former bore no acorns, and the people gathered the latter to avoid starvation. I pointed to one pot-bellied specimen of humanity, as an evidence of some addition to this primitive food, but he stoutly claimed that the protuberance was the sole product of the forest! Whether he was quizzing or not I don't know. The meals one gets here at four *bits* each (50 cents), are strictly in keeping with the character of the enterprising hosts. They seem to provide on the same principle with the old dame, who thus explained her success in cheap boarding. "She found out what folks *didn't like*, and gave them enough of it." It was stoutly asserted by some of the more knowing passengers, that the proprietors of this route, not content with 10 cents a mile for the fare, run their stages to such houses as will give them the largest division of spoils; and as there are 60 or 80 meals per day, disposed of at each house, at half as many dollars, seven-eighths of which must be clear profit, this alone will afford no inconsiderable income to the enterprising participants of this scheme of wholesale plunder. I have never seen a Yankee trick north of Mason and Dixon, quite so successful as this. If in carrying out this praiseworthy scheme, there happens some slight inconvenience to the jaded, night-worn traveller, he must console himself with the reflection that his loss is the landlord's gain; and as considerate Jack Falstaff said to the simple travellers he was robbing—"Honest men must live." A fellow passenger told me it was not far from our route, that in company with two or three ladies, they were served with a beverage passing under the name of tea or coffee, out of the odds and ends of some tin vessels, while the potatoes and Indian cakes were appropriately handed to each guest by a strapping negro boy of 12 or 14, out of his shirt, which was adroitly held up to contain them. He had *no other article of clothing on him.*(a) I advise every one coming from any point north of Washington to this place, to take the northern lake, or Ohio River route. It will require a few days longer, but can be accomplished with half the fatigue, and with little more than half the expense.

We were glad to get on a boat at Montgomery. Had the river been at moderate height, we should have passed down the 400 miles to Mobile in two days instead of five, owing to our frequently grounding. The Alabama is a fine winding stream, hemmed in by banks from 20 to 80 feet high. These are sometimes worn, and shelve off from the action of the stream; but are generally fringed with a great variety of forest trees, shrubs, and frequently the cane, which, springing up from the water's edge, surmounts the banks, and extends for miles in one impenetrable mass. It grows from 15 to 20 feet high, straight as an arrow and almost as thick as standing wheat. It throws out delicate branches near the tops, whose gracefully tapering foliage, at a distance, nearly resembles a field of luxuriant hemp, and these become so closely interwoven at their tops as to resemble one vast carpet of resplendent green. A variety of beautiful branching, evergreen, and deciduous oaks, heretofore mentioned, are found on the banks and bordering table lands, and occasionally the pine and other resinous trees. Here and there a magnolia may be seen shooting up with perfect symmetry for 50 to 70 feet, and bearing the dark-hued evergreen leaves, in a beautiful cone. In May and June, this is gemmed over its entire surface with beautiful snowy flowers, 5 to 7 inches in diameter and of great fragrance. The cypress that everywhere fills up the low grounds south of Virginia, is always to be found in its appropriate place here; and from nearly every tree, of whatever species, the

clinging moss hangs in graceful festoons. This appears to be exclusively an air plant. Its slender stem throws out minute tendrils or branches, some two inches long, and about the same distance from each other, and it is suspended from the twigs solely by the *mechanical* attachment of the stem. When this has become dead for a long distance from the point of its origin, the fresh shoots continue to multiply and grow on with undiminished vigor. Cattle are said to be fond of it, and if suited to impart nourishment to them, it seems improvident that such quantities of it are hung so far above their reach. This moss is exported largely to the Northern States, and is used for stuffing cushions, making beds, &c.

The Alabama, in the color of its water, its width, depth, current, and the general character of its banks, reminds one strongly of the Connecticut. When within 50 miles of Mobile, the land on either side begins rapidly to decline, and within 25 or 30, sinks almost to a level with the water. Still lower down, it assumes that amphibious state between land and water, that fits it only to bear a matted mass of useless aquatic reeds and grass, and it is appropriately employed in breeding interminable shoals of alligators, musquitoes, and a full supply of yellow fever.

The soil on both sides of the river is almost invariably good, as is much of that in Central Alabama. It is employed mostly in the production of cotton, though corn enough is raised for consumption, and some for exportation.

Mobile occupies a low sandy level at the junction of the river with the bay, just behind the lowest forming delta, which is annually encroaching on the tide waters of the gulf. Except in its southern water view towards the gulf, and the refreshing sea breezes wafted from it, Mobile has a position as little suited both to health and taste, as any city in the Union. The real estate and business is very much in the hands of non-residents; and the few who profess to be citizens spend much of their summers and autumns at the North. When all the cits and attachés are fairly in winter quarters, it is said to contain nearly 20,000 inhabitants. There is very little present growth or improvement here, as the greater facilities and encouragement for doing business in New Orleans, have drawn off the natural increase resulting from the augmented acres brought into cultivation, which border upon the streams having their outlets at Mobile.

R. L. ALLEN.

New Orleans, December 1st, 1846.

(a) Our readers will bear in mind that the writer is here speaking of only a small class of backwoods tavern-keepers, who are to be found in a narrow locality. We dare say Southern travellers could tell a tale nearly a match to this, of their experience, *north* of Mason and Dixon.

TO RENDER PAPER INCOMBUSTIBLE.—Pound a quantity of alum in a mortar, add to it a small quantity of gunpowder, and dissolve the whole in three times its weight of water over a slow fire. Paper dipped twice or three times in this solution while it is warm, and then dried, will be incombustible.

MORE FACTS ABOUT PORK AND BACON.

SINCE the publication of my article in your September number about pork, I have received so many inquiries about the matter, that I desire to answer them through you, and as all the minutiæ are desired to be known, I will commence at the beginning.

Have the hogs well fatted. To scald them you don't need a kettle as big as a thimble. The most convenient vessel is a trough to scald in. To heat a hogshead of water, build up a fire of logs and chunks near your killing place, and heat a dozen stones as big as your head, red-hot, or as near it as you can. Put these, or a part of them, in the water until hot enough, and then take out and repeat if needed. It is the easiest way you ever heated water. If you have a trough, the stones may remain in one end while you scald in the other. When ready to cut up, lay the carcass on the cutting bench upon its back, and first take off its head leaving all the neck with the shoulder, take off the jowls, for they make excellent bacon. Now if the hog weighs over 200, cut off the ribs on each side of the back bone—if smaller, split the back-bone—take out the back-bone clear to the tail, with as little meat as possible—now cut the two halves apart, and next take out the lard, then the ribs as thin as possible—next cut out a large handsome-shaped ham, then the shoulder just as close to the point of the blade bone as you can—now trim off the tender loin, and all loose lean pieces for sausage meat, and strips of belly and skirts of fat on all the pieces for lard. Your hog is now cut into six pieces (excluding head and scraps), which will be about three-fourths of the entire weight. Lay these pieces, flesh side up, on a bench or floor, and sprinkle fine saltpetre at the rate of two ounces to the cwt., and then sprinkle or rub fine salt over them at the rate of six pounds to the cwt., and continue to pile up one piece upon another as long as you like. If the hams weigh about 25lbs. each, and do not freeze, they will salt in four weeks, being overhauled once in the time for the air to come to all parts, and to rub a little of the loose salt upon fresh looking spots. When ready to hang up, sweep off all loose salt, and smoke in a room that is not tight, and be sure never to have the fire near enough to heat the meat in the least degree—use sweet wood, and continue a moderate smoke for four or five weeks. Now take a cotton bag (the weather being still cool), big enough to cover the ham and hang loosely, and tie the mouth of it closely around the string of the ham, and as long as you let it hang, so long you will have just such good, old, sweet bacon as I do.

I am aware that this is in part a repetition of the other article, but it seems so hard to make your Down East folks understand how to make Hoosier bacon.

I will give you another detailed table of weights of a dozen hogs and all the separate parts in the spring.

Those who have written to me upon this subject will please accept this as an answer.

The price of dressed hogs, weighing 200 to 250 lbs., in Chicago at this time is 2 to 2½ cents per lb.; butter 10 to 12½ cts.; wheat, first quality, 50 cents per bushel; corn 22 cents; oats 14 to 16 cents.

SOLON ROBINSON.

Crown Point, Lake Co., Ia., Dec. 23d, 1846

AGRICULTURAL PUBLICATIONS AND SOCIETIES.

I HAVE been a subscriber to your periodical from its commencement, and have witnessed with pleasure the favor it has received from an intelligent community, and now heartily congratulate you on its success and its usefulness; and indulge the hope that no friend of the great branch of national industry which it advocates with so much intelligence and ability, will be backward in still further promoting its present extended circulation.

The improvement of the agricultural condition of the State, will progress in a ratio proportionate to the intelligence possessed by the cultivators of the soil. Hence the great utility of a liberal patronage to well conducted agricultural papers, to awaken an interest and diffuse useful information; and it seems to me no means can be more efficient in promoting this end, than the circulation of such papers as the Agriculturist and others as conducted in this State. In connection with these papers, every county in the State should organize and keep in active and efficient operation well conducted agricultural societies, co-operating with the great State Society which has been so useful to this great interest.

Troy, December 21st, 1846. GEO. VAIL.

A NEW MODE OF FATTENING HOGS.

A GREAT change has taken place in the minds of some of our largest planters. They are gradually dropping the system of purchasing everything used on the plantation. Numbers are making their own pork, and this is a great item in economy. A notion is now prevailing, of making pens about 6 feet square, and in winter, giving slops morning and evening, with plenty of fresh water during the day, and one ear of corn shelled in their trough at noon. The pen must have a good smooth plank floor and a shelter to protect the occupants from the sun and rain. This plan, I assure you, will produce from a six month pig on the following January, a hog weighing 200 lbs.

Permit me to offer the following suggestions to those who wish to try the above method. Erect a number of coarse cabins, say 12 feet by 12 feet. Divide these into pens, with slabs, into four apartments, making them 6 feet square. A good floor well fitted together and smooth, a water-tight roof, with a trough of plank at one end for slops, food, and water, completes the whole. I would convey the water to the houses by means of pipes of cane, or wooden troughs, so that from a large reservoir it can freely flow to each. I would make the house dark by means of a door. As for food, the course as recommended above is very good; but a small garden or patch of vegetables for the use of the hogs, would be a great acquisition. A state of repose is the best for accumulating adipose tissue on any animal, which is taught by common experience; and whenever there is an irritant, the pulmonary and cutaneous transpiration is accelerated. Consequently the fatty matter is thrown off. The French have improved on this. They take a chicken, and after making a capon of him, confine him in a narrow space so that he cannot turn nor move, and after feeding him for a few days, it is astonishing how suddenly the animal becomes loaded with fat. Upon this principle I would make my pens contracted, in order to shut off the light and heat. A horse, for example, will not fatten, however highly fed, during our hottest summer months. This proves my theory.

The benefit of this manner of feeding is its cheapness and convenience, as one hog will consume during the year, just two barrels of corn. Some one has recommended building a pen near each negro cabin, and making the occupant regularly feed and water the hog. At the same time promising to give him an eighth, or a quarter of the animal when sold. This will stimulate him to feed him well. JAMES S. PEACOCKE.

Redwood, La., October 26th, 1846.

VALUABLE RECIPES FOR COOKING INDIAN CORN.

THE two following recipes from A. Barclay, Esq., H. B. M. Consul at New York, we extract from the Memoir on Indian Corn, lately compiled under the direction of the American Institute. It was after these recipes that the samples of excellent hommony and hommony bread were made and presented to the New York Farmers' Club by Mr. Barclay, a notice of which will be found on page 203 of our last volume.

How to Make Hommony.—Wash a pint of grits (particles of flint-corn ground to one-fourth the size of a grain of mustard, with the finer parts of the flour separated by a sieve) in two or three waters, taking care each time to let them settle. When you pour off the water the grits must be well rubbed with the hands in order to separate them from the finer particles of flour. Then put them into a saucepan with a pint of water slightly salted, and let them boil slowly for nearly half an hour, occasionally stirring the mixture as soon as it begins to boil.

Hommony may be boiled to any consistency, that may be preferred, from that of mush to the dryness of rice.

Excellent Hommony Bread.—Break 2 eggs into a bowl and beat them from five to ten minutes. Add by continually stirring, a salt-spoon of table salt, 4 or 5 tablespoonfuls of hot hommony reduced nearly to the consistency of thick gruel with hot milk, 1 large spoonful of butter, and a pint of scalded Indian meal squeezed dry. Make up the mixture into small loaves or round cakes 1½ inches thick, and bake in a brisk oven.

EXPANSION OF BODIES BY HEAT.—A mass of lead that occupies the space of 350 cubic inches at 32° F. will expand, if heated to 212° to 351 inches. Glass, by the same increase of temperature, expands 1-1200th part of its bulk; mercury, 1-55th part; water, 1-22d part; and alcohol, or spirit of wine, 1-9th part of its bulk.

A bar of glass 1200 inches long, will increase in length by the change of temperature from 32° to 212° F., 1.04 inches. A bar of platinum, of the same dimensions and change of temperature, will lengthen 1.04 inches; steel, 1.47 inches; iron, 1.51 inches; copper, 2.4 inches; brass, 2.3 inches; tin, 2.9 inches; lead, 3.45 inches; and one of zinc, 3.6 inches

Ladies' Department.

REPLY TO REVIEWER ON KNITTING, &c.

WILL you once more allow me to occupy the residue of some half-filled page, in order to correct a slight typographical error in my answer to Solus' article on "Knitting," published in the August number of the Agriculturist? which, trifling as it appears to be, is sufficient to throw an air of ridicule on the evening amusements of my country gentlemen. What I wrote was intended to recommend knitting, basket-making, &c., as a change from the equally pleasant but more elegant employments of "drawing, and carving (not *carrying!*) in wood."

I do not remember, and have not time just now to look, whether the reviewer who noticed my little article on gardening, meant to "handle" the article itself, or only some notable error in it, "without gloves;" but he certainly does accuse me of "using too many words." A crusty codger he must be, to wish to deprive a woman of one of the very few privileges even nominally allowed her! Now had I been a little more "discursive," the printer could not have made me say anything so queer; for I should have told of beautiful models of rural architecture *carved in wood*, and fine casts in plaster of favorite domestic animals, made by two brother farmers during the evenings of last winter, by the brilliant light of a lard lamp. I should have mentioned exquisitely finished drawings, and good paintings of various subjects, the products of the leisure hours of a Pennsylvanian farmer, whose sisters "trundle that wheelbarrow," wear those gloves, and gum elastic shoes, and "work in the garden every day before breakfast," and who enliven the refined labors of the family every evening, by "thumping the piano," and singing in a style that would touch the heart of Reviewer himself—*if he had one!* But probably he is some stiff, crusty bachelor, whose far-off cousins sat for his not too attractive portraits of American farmers' daughters. Sisters he cannot have, and as he has been so unfortunate in his female acquaintances, he deserves our pity. One thing more I can tell him,—that I will be as "discursive" as I please, and write about wheelbarrows, governesses, country schools, and "black babies," if I like, into the bargain.

I had determined resolutely to read nothing more of Reviewer's critiques; yet I could not help looking, just to see what he said about "knitting," and then, to use a phrase borrowed from Salmagundi, I indulged myself "in a burst of thirty feet of solid laughter" at the idea suggested by his advising "Solus to go where he can get his stockings knit at home." To have the good offices of the little old maid contended for because she can use her knitting needles, and dares to boast in print of this, her only accomplishment, has so much real fun in it, that I have felt sorry that my incognita would not allow me to let any one share in my mirth. I have laughed off at least *two wrinkles* from my brow, for which I thank him, as in duty bound. But if he had seen me throw aside my knitting—a slipper—a *man's* dressing slipper, I believe—and take the pen to write the above very *amiable* remarks, he never would have thought of his pleasant ingle-side, home-knit stockings—Solus' *beau ideal* of domestic comfort, and my cross-looking, tidy, little ladyship as connected therewith, I know.

Reviewer may be assured he shall not laugh me out of my fancy for urging my young countrywomen to cultivate a taste for gardening; and telling them what I have found to be the best methods of gaining health and pleasure at the same time; and as to scolding me from my purpose, let him try to remember if he ever heard of a woman who was not always confirmed in her own way by opposition. But to be serious for a moment. Can any one point out a purer pleasure, or a more mind-ennobling pursuit in which a woman of cultivated taste, and refined feelings, can be engaged, than in the active care of a garden? For myself, I would rather relinquish a hundred other gratifications, than give up the feelings of chastened enthusiasm excited by everything connected with it. When I am grieved in spirit, or vexed in temper, by the unavoidable cares of my little world, I go out and *work* in my garden; and in the healthful exercise of the body, and the beautiful soul-subduing quiet that pervades the place, and steals like a healing balm over my mind, I soon forget my troubles,—and restored to peace, cheerfulness, and comfort, return to household cares and duties, prepared to meet them with a calm, if not a smiling face.

When I am happy, I go to the garden, and find the flowers take a brighter hue, and the birds sing more joyously their welcome to me; then "looking through nature up to nature's God," my whole soul rises in thankfulness to "the Giver of every good and perfect gift," for all his manifold mercies to the children of men.

Patience, for a moment more, good Mr. Editor, and, knitting again in hand, I will take leave of pens and printers, after wishing Reviewer speedy success in his search for a *knitting* wife (*he* does not use tobacco?) who will humor his love for sour craut, and every other harmless whim, and sympathize in his abhorrence and contempt for "dried cabbage leaves" And, for many bright years to come, may he

> "Make a happy fireside chime
> For weans and wife—
> *That's* the *true* pathos and sublime
> Of human life."

Eutawah. E. S.

MUSICAL BELLS FOR COWS.

AN accomplished and somewhat romantic French lady, on visiting the château of a distinguished nobleman, says, I have heard for the first time, an admirable and enchanting sound, which, if generally established, would add an inexpressible charm to the other beauties of a rural life. This was no less than an inconsiderable herd of shining cows, each with a musical bell attached to her neck, attuned with the greatest nicety, of several octaves, high and low—forming a delicious, yea, a kind of celestial music, the sweetness of which has a powerful effect on the imagination, and cannot be listened to without experiencing a sensible emotion.

This, Mr. Editor, the farmers may say, is all gammon, and will produce no butter and cheese; but, allow me to tell you, it is practicable; and I have little doubt that many a gentlewoman, after

reading this, will have musical bells attached to her cows, and that the milk-maids will employ them in tuning their voices to many a glee over their well-filled pails. A beautiful herd of cows with these harmonic bells, attuned with art, grazing on their sunny green slopes, interspersed with copses of wood and sylvan clumps, could never be observed by a lady of refined taste, without awakening associations full of interest and of the highest gratification. CATO.

Ashley, Mo., October 19th, 1846.

Boys' Department.

BUYING APPLES.

Two boys, James and Robert, received six cents each to buy apples. James purchased two dozen of small Lady Apples, one inch in diameter; but Robert, more considerately, bought with his money two large Pippins, three inches in diameter. On their way to school, the question rose, which had made the best bargain. James contended, that, as he had the most apples in number, and as they made a larger pile when placed together, he had spent his money to the best advantage; but as Robert differed from him in opinion, it was agreed that the matter should be referred to their teacher at the first convenient opportunity after they should arrive in school.

The teacher, after hearing the statement of each, requested James to compute the cubic contents of a globe one inch in diameter, and then as the apples resembled small globes in their form, to determine the number of cubic inches in 24 little globes of the same size. James, being good at figures, went immediately to work, and soon ascertained that the contents of a one-inch globe were equal to 5236-10,000th part of a cubic inch, and that 24 such globes contained a little more than 12½ cubic inches, which his teacher told him was about the amount of solid matter his apples contained. Robert, meanwhile, had taken the hint, and calculated the contents of a three-inch globe, which he found to contain more than 14 cubic inches, whence it was evident, that he had expended his money to more than double the advantage.

James, chagrined at this, and determined never to be caught so again, set himself to work and made the following table, by multiplying the diameter of each apple or globe three times into itself, and the products by the constant number 0.5236.

Diameter of Apples. Inches.	Cubic contents. Inches. Dec.	Value of Apples. cts. m.
1	0.5236	0 1
1¼	1.2266	0 3
1½	1.7672	0 4
1¾	2.8062	0 6
2	4.1888	0 9
2¼	5.9642	1 3
2½	8.1813	1 7
2¾	10.8892	2 3
3	14.1372	3 0

The above principles will apply for general purposes, in purchasing plums, peaches, oranges, and all kinds of articles of a globular form. B.

FOG, VAPOR, CLOUDS, RAIN.

Q. Where does all the water of springs, brooks, and rivers, finally run?

A. It runs into the sea or ocean.

Q. Do these streams raise the surface of the sea?

A. By no means; the water goes back again to the land.

Q. In what form does it do this?

A. In the form of clouds and rain.

Although the water of the ocean is salt, rain water is not so; because only the fresh part rises in the form of vapor.

Q. How are clouds produced from the sea and other bodies of water and land?

A. By fog and vapor, which rises from their surface.

FOG RISING FROM THE OCEAN AND FORMING CLOUDS.—FIG. 13.

The clouds formed in this manner, are driven by the wind over different portions of the earth; and in this way the earth is kept constantly supplied with refreshing showers of rain.

Q. What causes fog and vapor to rise?

A. The warmth of the earth and sun.

"But there went up a mist from the earth and watered the whole face of the ground."—*Bible.*

Q. What is this process called?

A. It is called evaporation.

The "drying up" of water, as we term it, is called evaporation, as steam rising from a vessel of hot water. Hay is made from evaporation.

Q. What appears to be the order in which clouds, rain, springs, &c., are formed?

A. The rain forms springs;
The springs form rivers;
The rivers run into the sea.
The sea gives vapors;
The vapors form clouds;
The clouds give rain again.

"All the rivers run into the sea, and yet the sea is not full; into the place from whence the rivers come, thither do they return again."—*Smith's First Book of Geography.*

FOREIGN AGRICULTURAL NEWS.

By the arrival of the steamer Hibernia, we are in receipt of our foreign journals up to January 5th.

MARKETS.—*Ashes* quiet with moderate sales. *Cotton* has advanced altogether the past month from ⅛ to 1⅛d. per lb. Stock on hand in Liverpool on the 1st of January, 438,970 bales, against 885,480 at same period last year. *Flour* has advanced 5s. 6d. to 6s. per bbl.; *Wheat* 1s. 6d. per bushel; *Corn* 12s. to 14s. per quarter; *Corn Meal* 4s. per bbl. *Beef* and *Pork*, a slight improvement. *Lard*, a decline. *Cheese*, firm. *Hemp*, an advance of £2 per ton. *Naval stores*, little doing. *Rice* an increased demand at a slight advance. *Tobacco* a decline of ¼d. per lb. *Wool* in fair request, at lower prices than last year at this time.

Money continues abundant without any change since our last.

Smithfield Cattle Show.—This great annnal show of fat cattle, &c., came off as usual, in December last. It is said there were 50 more entries than the previous year. We notice Prince Albert and several distinguished noblemen among the exhibitors. They carried off a fair proportion of the prizes. The Prince is said to excel particularly as a breeder of swine. We observe that the Herefords obtained the best and greatest number of prizes of any other breed. Whether this is to be attributed to their superior numbers, and the pains taken in selecting them for the exhibition, we are unable to say. This is certain, however, that Short Horns still continue too valuable to make fat beasts of.

American Wool.—Notwithstanding the discouraging results to a few enterprising shippers, this article promises at no distant date to become of first rate importance. It is important to notice the great weight of the fleece, which is nearly double that of any other country producing the same qualities. Receipts last year were below the previous one.

Beet-root as a Substitute for Flour.—A Belgian gentleman has made numerous trials of the process invented in Germany for making cheap bread, by mixing wheat flour and roasted beet-root, and these trials have perfectly succeeded. The poor families to whom some of the bread has been distributed, have declared that they like it quite as well as the ordinary second bread.

Products of the Sandwich Islands.—Samples of sugar, cotton, and wool of excellent quality, grown in the Sandwich Islands, have been forwarded to Liverpool, and they formed objects of considerable attraction at the underwriters' rooms last week.

Culture of Cotton in Turkey.—The Turkish Government has had several varieties of cotton seeds, and men competent to superintend their culture, recently brought from America, for the purpose of trying the experiment of cultivating the American varieties of cotton in the different provinces of the empire, in which every kind of climate exists.

Advance in Spanish Wool.—The latest accounts from Spain fully confirm the previous statements of great losses in the flocks from severe drought, and there is every prospect of a serious deficiency in the next clip of wool, which has already led to an advance in prices.

Exportation of Beet-root Sugar from France—The Minister of Commerce has just issued a royal ordinance authorizing the exportation of beet-root sugar to foreign places. This measure will have the effect of enabling the French sugar-makers in France to send their goods to England. In the third month of the present sugar-making season, the production of beet-root sugar in France amounted to 16½ million kilogrammes, being an increase of 6½ millions over the corresponding period of last year.

Reduction of Duty on Grain in Denmark.—In Denmark, the import duty on corn, oats, and flour has been considerably reduced by a royal ordinance of the 9th of December.

Sulphur in Food.—According to M. Dumas, of the Paris Academy of Sciences, sulphur may travel through the air, from the sulphates which contain it, in large bodies of water, to lands which require it for vegetation or for the production of the animals which live on the plants produced by these lands. It is worthy of remark, that yellow sulphur performs an important part in the production of all azotized substances of plants and animals. They contain, on an average, a 1000th part of their entire weight. Thus, 10 kilogrammes of dry azotized matter, which is about the quantity in a man of ordinary size, contain 100 grammes of sulphur.—*Athenæum.*

Geese.—Where there is water, or a common for them to feed on, geese may be profitably reared, and with very little trouble, and the feathers are always valuable. When first hatched, do not let them wander far, but the old goose must not be shut up. A yard or empty barn is the best place for the goslings for the first week, letting them out two or three hours each day to feed on grass. It has been often remarked that cattle are rarely unhealthy where any considerable number of geese are kept, for the geese will eat and thrive upon certain weeds and grasses which are more or less unwholesome for cattle, and which are mingled with the herbage in most pastures. Most farmers are aware of this, and a sickly cow or bullock is not unfrequently turned into a field where geese have been allowed to range, with the view of its deriving benefit from the change. The grass on commons, on which geese are kept, is always fine and sweet.—*The Farmer.*

Culture of Rice in the Papal States.—Accounts from Italy inform us that the papal government has just taken a measure of great importance to the agriculture of the Roman states. The rice fields in some parts of the country are the blessing of the people, but in many districts the crop has often failed. A distinguished economist has proved that this is owing to the faulty method of its cultivation, and has made experiments in the district of Cervetri, near Rome, which have been attended with the happiest results. The Pope, fully appreciating the value of a proceeding which tends to an extension of this article of food, has nobly rewarded the experimentalist; and, by a recent decree, has ordained that the whole of the valley between Ostia and Porto d'Anzo, about 300 kilometres in extent, and the property of the state, is to be appropriated to the culture of rice on an extensive scale. One half of the crop is to be sold for the state, and the other half to be given to the poor. This decree has had a wonderful effect, and the works were commenced immediately for conveying the waters of the Nemi, which are to irrigate the plantations established in the valley.

Hen-Dung as Manure.—The dung of fowls kept dry is excellent, and may be applied for all the purposes for which other manure is applied; but, being of a hot nature, like pigeon-dung, it must be applied in small quantities and mixed with the soil, or some other material, so as in some measure to counteract its burning effects.—*Gardeners' Chronicle.*

The Production of Wool in Germany has taken such a remarkable developement, that Germany now takes the lead of all nations in the production of that article. In the states of the Customs' Union alone there are 21,961,554 sheep, yielding at the lowest calculation 48½ million lbs. of wool per annum. Austria produces 700,000 quintals per annum, two thirds of which come from Hungary, Transylvania, and Bohemia.

Culture of Hops.—An order has been received to ship 50,000 sets of Kentish hop plants for Hobart Town, where the soil and the climate are said to be most congenial. An inferior sort has been tried there experimentally, and found to turn out more than equal to the planter's expectations.

Editor's Table.

Gun-Cotton.—We have received from Dr. C. T. Jackson, of Boston, an account of his success in the manufacture of the celebrated gun-cotton, which has excited so much interest of late throughout Europe as well as in our own country. He obtained the best article by mixing in a current of air, equal measures of sulphuric acid (specific gravity 1.92 to 1.96) and nitric acid (sp. gr. 1.455), and stirring them well together with a glass rod until the temperature of the liquid fell to about 130°F. He then took some clean, well-picked Sea Island cotton, dried it at a temperature of 212°, immersed it as quickly as possible into the acids, and let it remain covered by them from three to five minutes. He next poured off the liquid, squeezing out as much of the remaining acid as he conveniently could, and then subjected the cotton to repeated washings in cold water by rapidly stirring it with a glass rod, so long as a trace of acidity remained, which he determined by blue litmus paper. The cotton was then squeezed dry as possible in a cloth, and immediately after in blotting paper; and the fibre, after being straightened and picked loose, was dried in the open air, at a temperature below 212°F. Cotton prepared in this manner explodes without odor or smoke, leaving little or no residue, and is totally insoluble in ether. The operation twice repeated, in strong acids, it is said, renders the cotton thirty-six times more powerful than an equal weight of gunpowder.

In the course of his experiments, Dr. Jackson ascertained that a tolerably good article can readily be made by employing the acids a second time, without re-distillation, first by soaking therein the cotton for twenty-four hours, and then treating it in every respect in the manner above described. The cotton prepared in this way will resemble the other in appearance, and will explode nearly as well; but in burning on white paper, it will leave a yellow stain. It is completely soluble in strong sulphuric ether, giving out a great number of gaseous bubbles as it dissolves. This ethereal solution is thick and ropy like the white of eggs, and makes an excellent varnish for pictures and an impermeable covering for paper or cloth, as well as a good proof cement. Evaporated spontaneously in a watch crystal, it becomes transparent as glass, yet it is tough like horn, and is not in the least explosive. It is insoluble in acetic acid, and hence differs from xyloidine discovered by Braconnot, in 1833, and was afterwards more fully noticed by M. Pelouze, in 1838, the latter of whom stated that "it was very combustible, took fire at 360°, and burnt with vivacity," which he thought probable, at some future day, might render it valuable in artillery. It differs, likewise, from xyloidine, according to Dr. Jackson, in many other respects, and is doubtless a new substance. Professor Schönbein, of Basle, and his associate M. Böttger, at all events, have the credit of the discovery of the first application of this remarkable substance to useful purposes, although the method employed by them for its manufacture has not as yet been made public.

When properly prepared, gun-cotton increases at least one-half in weight, rapidly burns with a voluminous yellow flame, at a temperature of about 350°F., although it has frequently been known to explode as low as 212°. Hence the utmost caution is necessary in its preparation as well as in its use. It burns so much more rapidly than gunpowder, that the latter, when placed in immediate contact, is not inflamed by it, and no inconvenience is felt by burning a flock of it on the naked hand. It detonates with some difficulty when struck with a hammer on an anvil, unless heated to nearly the exploding point. Wetting does not appear to injure it, if it be quickly and carefully dried.

The explosive, or projectile force of gun-cotton is much more effective than that of powder. An interesting experiment was made on the 4th of December last, in blasting a ledge of rock then excavating for the new canal, in Lowell, Mass., under the supervision of Mr. Wm. E. Worthen, the engineer. About 78½ oz. of gun-cotton were enclosed in a "Vulcanized" India-rubber cloth case, five inches in diameter, and three feet long; and then let down by its fuse, into a hole, drilled in the rock, five inches in diameter and nine and a half feet deep, and afterwards covered with six feet of dry sand. The explosion, it is said, was accompanied with a report not louder than a musket shot, and the mass of rock rent off was estimated to weigh about 350 tons, an effect, it is thought, which would require in gunpowder about 10 lbs.

Gun-cotton has been rejected for military purposes by the British Board of Ordnance, on account of its exploding at a much lower temperature than gunpowder, and also from its producing moisture within the gun.

We have been thus particular in describing the nature of this important substance, both on account of its interesting scientific detail, and the increased demand for cotton which is likely to arise from its use in blasting rocks, and probably for many other purposes.

Honorable Testimonial.—The American Institute has very properly manifested its approbation in awarding Mr. Browne, for his treatise on the Trees of America, its highest premium, a Gold Medal; and it is evident that those who make themselves acquainted with the contents of this valuable work, will be convinced that this high mark of respect has been justly bestowed.

Early Salads.—The preparation for raising early salads and other spring vegetables is one of the most important duties of the farmer or gardener. Those who have a desire to have good lettuce, endive, dwarf cabbages, cauliflower, broccoli, parsley, asparagus, radishes, &c., early in the spring, need not be under any apprehension of the difficulty, providing they are willing to be at the expense of a few frames. These may be made of stout planks, with the back one two feet deep, the front one fifteen inches, and the sides sloped towards the mid-day sun. The width may be about six feet, and the length, which may be varied at pleasure, should be divided into compartments of three feet, over each of which there should be fitted a window or sash so arranged as to be more or less withdrawn or replaced. These frames are usually set upon hot-beds formed of fresh horse manure, two or more feet in depth, and covered with six or eight inches of fine compost or warm garden mould. As soon as the frames are put down, the sashes should be placed over them, allowing the fumes of the manure to pass off for three or four days, occasionally opening the frames and stirring up the soil. The seeds may then be sown either in drills or broad-cast, and the two following points attended to without fail, viz., *to promote the circulation of dry air or winds through them at all times, and to keep out frost.* During cold nights, the latter may be done by covering the frames with matting or straw, and fresh air may be supplied by slightly removing the sashes in the warmer parts of the day. Hot-beds and frames should always be placed over a well-drained spot, receiving the full effect of the sun, and protected from cold chilling winds.

A New Feature in Cattle Shows.—At the recent Agricultural Fair in Burlington, Vt., Mr. L. Chase presented for premium three pretty female children, two and a half years old, born at a birth. The committee on Household Manufactures awarded him $14, which was voluntarily contributed by the old bachelors present, who said they considered him a legitimate object of charity.

THE POTATOE PLANT, its Uses and Properties; together with the Cause of the Present Malady, the Extension of that Disease to other Plants, the Question of Famine arising therefrom, and the Best Means of averting that Calamity. By Alfred Smee, Surgeon to the Bank of England, &c. &c. Illustrated with 10 Lithographs, and dedicated to His Royal Highness the Prince Albert. New York: Wiley & Putnam. pp. 157, 12mo. Price 75 cents. This is a work that has evidently required much laborious research in its preparation, and throws a great deal of light on the subject of which it treats. It contains the most perfect account of the potatoe plant, and the insect inhabiting it we have ever met with, which, if from no other considerations, entitle the book to a wide circulation.

We do not agree with the author, however, in his theory as to the cause of the potatoe disease, nor do we believe it is within the reach of human perception to explain it. The grounds on which he forms his opinion are mainly as follows:—The potatoe plant, as we cultivate it, he contends, is in an abnormal or diseased condition, having great excess of tuber and great deficiency of leaves; and that its death, in the form of the prevailing malady, is influenced, but not caused, by heat, light, electricity, moisture, soils, and manures. The direct cause of the disease he attributes to the work of a little insect he designates by the name of *Aphis vastator*, which punctures the leaf, sucks the sap, and destroys the relation between the leaf and the root, thus causing the leaf or some other part of the plant to become gangrenous, or, in other words, to die. After this attack, several species of fungi take root, the growth of which, he thinks, in many cases, is probably materially assisted by the prior attack of the Aphis. The same insect, also, he says, preys in a similar manner upon the turnip and cabbage tribe, the beet, the carrot, the horse-radish, the tomato, the sweet potatoe, the Jerusalem artichoke, wheat, clover, Indian corn, and doubtless many other plants. He infers from analogy that the disease is transitory, and will pass over the globe, and then disappear; yet it may increase, and kill millions from famine before it finally departs. The evil may be lessened, he thinks, by striking at the cause, and destroying the Aphis to as great an extent as possible, by employing birds for the purpose, as well as ichneumons, lady-bugs, spiders, &c., by burning infected haulms, and isolating from each other all plants liable to be attacked.

The *Aphis*, when fully grown, he says, is about the tenth of an inch long, the color of which is white, olive-green, brown, or inclined to red. It is found in all the three stages of existence—the larva, the pupa, and the imago, or perfect winged insect; and in all which states, like its congeners, it feeds, remains active, and probably multiplies.

The author is in error when he states that "the first figure of a potatoe is to be found in Gerard, Herbal (1597)." It is figured and described in Cieça's "Chronicles of Peru," published at Seville, in 1553. A few of the directions in the work are exceptionable, or at least are ill adapted to the climate of the northern and middle parts of the United States. For instance, he recommends the sprinkling of dry quick lime over the plants, for the purpose of destroying the Aphides as soon as they appear, and even autumn planting as a means of preserving the potatoe against the disease. It is well known that quick lime too profusely applied to the young leaves of many plants, will cause them to die; and by planting potatoes in autumn, within any reasonable depth, in the northern parts of the United States, they would be destroyed by the winter frost.

THE MAGAZINE OF HORTICULTURE, Botany, and all Useful Discoveries and Improvements in Rural Affairs. Edited by C. M. Hovey. Published monthly by Messrs. Hovey & Co., Merchants Row, Boston, and Saxton & Miles, New York. Price $3 a year. This excellent and standard periodical has reached the first number of the 13th volume, and has been well sustained from the commencement up to the present time. We congratulate the publishers on the well-earned success which has ever attended their enterprise, and trust that their work will, as usual, meet with deserved encouragement.

THE USEFUL ARTS, considered in connection with the Applications of Science. With Numerous Engravings. By Jacob Bigelow, M. D. Professor of Materia Medica in Harvard University. In 2 volumes. New York: Harper & Brothers. pp. 396 each. 12mo. Price $1.50. These volumes were prepared at the request of the publishers of the School Library, now issuing under the sanction of the Massachusetts Board of Education. Most of the subjects contained in them were formerly comprised in a course of lectures delivered by the Author in Harvard University, and afterwards published in a treatise entitled "Elements of Technology." The work, in its present form, presents various modifications and additions, and brings the account of its subjects down to the latest dates.

AN INTRODUCTORY GEOGRAPHY, Designed for Children. Illustrated with 126 Engravings, and 20 Maps. Fourth Edition. By Roswell C. Smith, A. M. New York: Paine & Burgess, 60 John Street. pp. 176. Price 37½ cts. We like this little book, not only for its bold, effective, and instructive maps and cuts, but for its clear, concise, and intelligible text, which render it by far the most judiciously condensed school geography, and we may almost say, philosophical work, we have ever met with. It seems better suited to teach the young than any other similar work in public use; or rather it is better suited to enable them to teach themselves, being simply and familiarly arranged in a catechetical form, which, before all others, is equally well adapted to the minds of beginners as to those of older pupils for the purpose of review. For a specimen of the work, see p. 66 of the current volume.

A TEXT BOOK ON CHEMISTRY. For the use of Schools and Colleges. By John W. Draper, M.D., Professor of Chemistry in the University of New York. With nearly 300 illustrations. Third edition. New York: Harper & Brothers, 82 Cliff st. pp. 408, 12mo. Price 75 cents. This excellent work contains the outline of the course of lectures delivered by the author, every year, in the University, and is also intended for the use of colleges and schools. The high standing of Dr. Draper as a chemist, and the popularity of the previous editions of this work, we trust will be a sufficient recommendation for the present.

THE ECLECTIC MAGAZINE of Foreign Literature for January contains a valuable selection of articles from the standard Periodical Literature of Great Britain. We give their titles as follows, indicating the sources whence they are derived: "Constantinople in the Fourth Century," from the London Quarterly; "Herder, the German Poet," from the Foreign Quarterly; "A Postscript about John Foster," from Frazer; "Schlosser's History of the Eighteenth Century," from the Eclectic; "Fortifications of Paris," from the London Quarterly; "Quinet's Vacations in Spain," from the Westminster; "Advice to an intended Serialist," from Blackwood; "The Facts and Revelations of Modern Astronomy," from the North British Review; "Adolphe Thiers," from the Dublin University; "Style of Walter Savage Landor," from the North British Review; "English Journalism," from Frazer; "Husband Catching," from Tait. In addition to these is a copious "Miscellany." There are also several Poems of sterling merit. The work is published monthly by Wm. H. Bidwell, 120 Nassau st., N. Y., at $6 a year, and is highly deserving of the patronage of families, and all others who have a taste for popular reading and sterling literature.

REVIEW OF THE MARKET.

PRICES CURRENT IN NEW YORK, JANUARY 26, 1847.

ASHES, Pots,	per 100 lbs.	$4 87	to	$5 00
Pearls,	do.	5 50	"	5 62
BALE ROPE,	lb.	5	"	6
BARK, Quercitron,	ton,	30 00	"	31 00
BEANS, White,	bush.	1 12	"	1 50
BEESWAX, Am. Yellow,	lb.	26	"	30
BOLT ROPE,	do.	11	"	12
BONES, ground,	bush.	40	"	55
BRISTLES, American,	lb.	25	"	65
BUTTER, Table,	do.	16	"	25
Shipping,	do.	9	"	13
CANDLES, Mould, Tallow,	do.	9	"	11
Sperm,	do.	25	"	38
Stearic,	do.	20	"	25
CHEESE,	do.	5	"	10
COAL, Anthracite,	2000 lbs.	6 00	"	7 00
CORDAGE, American,	lb.	11	"	12
COTTON,	do.	10	"	14
COTTON BAGGING, Amer. hemp,	yard,	11	"	14
FEATHERS,	lb.	25	"	34
FLAX, American,	do.	7	"	8
FLOUR, Northern and Western,	bbl.	6 38	"	7 00
Fancy,	do.	7 00	"	7 25
Southern,	do.	6 38	"	6 75
Richmond City Mills,	do.	7 25	"	7 50
Buckwheat,	do.	4 00	"	4 25
Rye,	do.	4 75	"	5 00
GRAIN—Wheat, Western,	bush.	1 30	"	1 40
Southern	do.	1 25	"	1 35
Rye,	do.	88	"	90
Corn, Northern,	do.	95	"	99
Southern,	do.	88	"	95
Barley,	do.	70	"	71
Oats, Northern,	do.	44	"	46
Southern,	do.	40	"	41
GUANO,	do.	2 50	"	3 00
HAY, in bales,	100 lbs	56	"	62
HEMP, Russia, clean,	ton.	220 00	"	225 00
American, water-rotted,	do.	105 00	"	185 00
American, dew-rotted,	do.	75 00	"	125 00
HIDES, Dry Southern,	do.	7	"	8½
HOPS,	lb.	9	"	12
HORNS,	100.	1 00	"	7 00
LEAD, pig,	do.	4 31	"	4 38
Sheet and bar,	lb.	4½	"	5½
MEAL, Corn,	bbl.	4 75	"	5 00
Corn,	hhd.	18 50	"	20 00
MOLASSES, New Orleans,	gal.	30	"	34
MUSTARD, American,	lb.	16	"	31
NAVAL STORES—Tar,	bbl.	2 00	"	2 25
Pitch,	do	88	"	1 06
Rosin,	do.	50	"	60
Turpentine,	do.	2 75	"	3 00
Spirits Turpentine, Southern,	gal.	38	"	41
OIL, Linseed, American,	do.	60	"	63
Castor,	do.	55	"	70
Lard,	do.	65	"	70
OIL CAKE,	100 lbs.	1 50	"	1 75
PEAS, Field,	bush.	1 00	"	1 50
PLASTER OF PARIS,	ton.	2 25	"	3 00
Ground, in bbls.,	of 300 lbs.	1 12	"	1 25
PROVISIONS—Beef, Mess,	bbl.	9 00	"	10 00
Prime,	do.	7 00	"	8 00
Smoked,	lb.	6	"	9
Rounds, in pickle,	do.	4	"	6
Pork, Mess,	bbl.	10 50	"	13 00
Prime,	do.	9 00	"	10 25
Lard,	lb.	8	"	9
Bacon sides, Smoked,	do.	5	"	6
In pickle,	do.	4	"	5
Hams, Smoked,	do.	6	"	10
Pickled,	do.	5	"	8
Shoulders, Smoked,	do.	5	"	6
Pickled,	do.	4½	"	5
RICE,	100 lbs.	3 37	"	4 38
SALT,	sack,	1 25	"	1 32
Common,	bush.	20	"	35
SEEDS—Clover,	lb.	6	"	9
Timothy,	7 bush.	11 00	"	20 00
Flax, clean,	do.	10 25	"	11 25
rough,	do.	9 00	"	9 25
SODA, Ash, cont'g 80 per cent. soda,	lb.	3	"	3
Sulphate Soda, ground,	do.	1	"	—
SUGAR, New Orleans,	do.	6½	"	9
SUMAC, American,	ton,	35 00	"	37 50
TALLOW,	lb.	8	"	9
TOBACCO,	do.	2	"	7
WHISKEY, American,	gal.	26	"	27
WOOLS, Saxony,	lb.	35	"	60
Merino,	do.	25	"	30
Half blood	do.	20	"	25
Common do		18	"	20

REMARKS.—The late news from Europe is most important, and has had a great effect on the market. *Ashes* have slightly advanced; *Quercitron Bark* $4 per hhd.; *Cotton* 1 to 1½ cts. per lb.; *Flour*, $1.00 to $1.50 per bbl.; *Rye Flour*, $1.00 per bbl.; *Wheat* and *Rye* correspondingly per bush.; *Corn* 10 to 15 cts. per bush.; *Barley* and *Oats* from 5 to 6 cts.; *Guano* ½ ct. per lb.; *Oil Cake* 25 cts. per 100 lbs.; *Provisions* from $1 to $2 per bbl.; *Lard* 1 ct. per lb. In *Naval Stores* there is a slight depression.

It is now settled beyond a doubt that Great Britain and Ireland, France and part of Germany, are in great want of bread stuffs, and that the demand for these from America will be very large during the year. Prices, therefore, must rule high. This will make it very advantageous for our farmers, and place them in a more prosperous condition than they have been for the last ten years.

TO CORRESPONDENTS.—Communications have been received from Ansel Downs, E. S., Reviewer, John Brown, 2d, R. L. Allen, R. T. Underhill, W. D., and Andrew Stone.

ACKNOWLEDGMENTS.—Transactions of the Worcester County (Mass.) Agricultural Society for the year 1846; Hempstead, L. I. Inquirer, containing a list of Officers of the Queen's County Agricultural Society for the ensuing year; Alabama Planter; Boston Independent Inquirer; The Yankee in Fairfax County, Va.; Addresses delivered at the 19th Annual Fair of the American Institute, by Hon. Henry Meigs, V. P. Adoniram Chandler, Hon. George Folsom, and Harman C. Westervelt, Esq.; Charter and By-Laws of the American Agricultural Association; and beautiful samples of wool, from E. Bridge, Pomfret, Vt.

☞ Persons who return the American Agriculturist are requested to write their names and Post-office on the wrapper, in order that we may know from whom they come.

Back Volumes of THE AMERICAN AGRICULTURIST, with tables of contents complete, for sale at $1.00 each; elegantly and uniformly bound in cloth, $1.25. These are handsome, tasteful books, and make very desirable premiums for distribution with Agricultural Societies, and should also find place in all our District School Libraries. They constitute the best and most complete treatise on American Farming, Stock-Breeding, and Horticulture, extant. When several copies are ordered, a liberal discount will be made.

Editors of newspapers noticing the numbers of this work monthly, or advertising it, will be furnished a copy gratis upon sending such notice marked to this office.

PERUVIAN GUANO FOR SALE.

THE Peruvian Company have directed their agent in the United States, Mr. Bartlett, to raise the price of Guano to $50 per ton, it will now be sold by us at the following prices:—

One ton or more.....2½ cts. per lb.
Smaller quantities.....2¾ to 3 " " do.

No allowance for tare, and no charge for packages. Cartage extra.

This Guano is warranted genuine, and direct from the Peruvian Company's agent. A. B. ALLEN & CO., 187 Water-street.
January 25th, 1847.

IMPERIAL OATS.

A few barrels of these superior oats just received and for Sale. Price $4 per bbl. They are great yielders, remarkably free from husk, and weigh over 40 lbs. per bushel.
A. B. ALLEN & CO., 187 Water Street, N. Y.

THE TREES OF AMERICA,

NATIVE AND FOREIGN, Pictorially and Botanically Delineated, and Scientifically and Popularly Described; being considered principally with Reference to their Geography and History; Soil and Situation; Propagation and Culture; Accidents and Diseases; Properties and Uses; Economy in the Arts; Introduction into Commerce; and their Application in Useful and Ornamental Plantations; illustrated by Numerous Engravings. By D. J. BROWNE, Author of the "Sylva Americana." Large 8vo. pp. 532. Price—Superbly bound in gilt morocco, $6—In muslin extra, $5. For sale by
SAXTON & MILES, 205 Broadway, N. Y.

PERUVIAN GUANO.

PERUVIAN GUANO, shipped by the Peruvian Guano Company, Lima, under the special authority of the government of Peru, and warranted pure as imported. All that is sent to this country is consigned to the subscriber, and will be received by him at New York, or by SAMUEL K. GEORGE, at Baltimore. Any other offered as *Peruvian*, is spurious. The price, in quantities not less than ten tons, will be $50 per ton. EDWIN BARTLETT,
January 25th, 1847. 42 South-street.

PROUTY AND MEARS' PLOWS.

Quite a variety of the above plows can be had at the New York Agricultural Warehouse, together with the most complete assortment of all kinds to be found in the United States.

From the Farmers' Library.

ANOTHER GREAT DISCOVERY IN VACCEREOLOGY.

HOW TO JUDGE A COW.

SINCE the days of Doctor Jenner's discovery of vaccination, or the cow-pox, being an antidote to the small-pox, nothing has appeared so extraordinary in that department of natural history as the discovery by M. Guénon, the son of a French gardener, of the means of ascertaining the *quality of milch Cows* by external and visible signs over the milk region of the animal.

The signs have been reduced to a clear system, and by committees of various agricultural societies in France pronounced "infallible," after repeated and most careful trials.

The work was translated by Mr. TRIST of the State Department, and published with numerous engravings explanatory of the system, first in the Farmers' Library. But the publishers, not willing to withhold a discovery so important and valuable from the poorest person owning or wishing to own a cow, have published it in a separate and cheap form, and it may be had at the Tribune office, or at most of the cheap publication offices in the United States.

While those who have given to this work even the slightest tests aver that with it for their guide, they are not fearful of ever again buying an indifferent Cow; others, who have been more minute and careful in applying the "signs" to living animals, declare, like the French agricultural committees, that the marks are obvious and worthy of every reliance.

The following, from sources of unquestionable veracity and practical knowledge, are submitted in proof of the truth of this wonderful discovery. But, independently of the great value of the cow-book for the purpose in question, other matters attached to it will fully recompense the purchaser for the trifling cost of the book itself, which is but 38 cents. Booksellers and Publishers may be supplied at the usual discount.

Under the operation of this system, which enables every one to select and put aside for the butcher calves that will be sure to prove bad milkers, the *whole race* of milch cattle may be rapidly improved throughout the Union. Every great discovery appears to be strange, and some of them incredible in the first instance, and few more than vaccination itself. With such testimony in support of this discovery of M. Guénon, no paper in the Union ought, we would think, to withhold a knowledge of it from their readers.

We have received quite a number of letters from different parts of the country fully corroborating the theory of M. Guénon. We select for publication the following:—

PRINCETON, Mass., October 15th, 1846.

Dear Sir: I received your favor of the 8th inst. desiring me to state my opinion of the value of M. Guénon's *Treatise on Milch Cows*, translated from the French, and published in The Farmers' Library. On my first meeting with this Treatise, I was impressed with its value, from my previous knowledge of some general marks whereby the milking properties of cows may, in some measure, be determined, and from the fact that I had myself noticed the oval marks above the hind teats, mentioned by M. Guénon as indicating good milking qualities, that I immediately commenced the study and application of his method to every cow that came under my observation. I have examined more than one hundred cows, and after carefully marking their escutcheons I have become satisfied that M. Guénon's discovery is one of great merit, and can be relied upon as true. I have no doubt that I can judge very nearly as to the quantity and quality of the milk any cow will give at the height of her flow, and also the time she will continue in milk after being with calf.

The way taken to convince myself of the truth of M. Guénon's method has been to visit the cow-yards of some of our principal dairy-farmers, and examine the escutcheons and marks on their cows, and make up my judgment as to the quantity and quality of milk each cow would give at the height of her flow, and how long she would continue in milk after being with calf; then inquire of the owners how much milk their several cows would give at the height of their flow, and how long they would hold out after being with calf; comparing the owner's account with my own judgment. I find I have mistaken in only five cases, out of more than one hundred examined.

I have great confidence in M. Guénon's method of testing the milking properties of cows, and consider it one of the great discoveries of the age. The advantage of this discovery to our dairy-farmers, enabling them, as I think it does, to determine the milking properties of their young stock at an early age, must be very great, and will be appreciated by every one who is in the slightest degree acquainted with the subject. In my opinion no dairy-farmer, after acquainting himself with M. Guénon's discovery, need possess himself of a bad milking cow.

M. Guénon informs us that his system is applicable to calves three or four months old. I have traced the escutcheons upon calves as early as two or three weeks old, and I see no reason why their value as future milkers may not be judged of at this age as well as at any other age. Yours, respectfully.

To J. S. SKINNER, Esq., JOHN BROOKS.
Editor of The Farmers' Library, New York City.

PATERSON, N. J., December 19th, 1846.

Dear Sir: I have read with great satisfaction M. Guénon's work on Milch Cows, by which one can judge by certain infallible signs, the milking qualities of the animal. I have compared the marks he gives for his first grade Flanders cow, and find they correspond with the escutcheon of my favorite *Devon Cow Ellen*, that has taken the first premiums at the two last cattle shows of the American Institute. My farmer has great faith in M. Guénon's work, and so has one of my neighbors, a knowing Scotch milk-man who keeps fifty cows. He says that after careful examination he places confidence in these marks, and they will govern him in his future purchases.

I return you my sincere thanks for giving to us farmers this valuable treatise of M. Guénon. I shall hereafter make my selection of the calves I will raise from my choice stocks from the marks given by this author. I think every farmer should own this work. With regard, yours, &c.,

ROSWELL L. COLT.

To the Editor of the Farmers' Library.

The above work is published and sold by GREELEY & McELRATH, New York, Publishers of Skinner's Farmers' Library and Monthly Journal of Agriculture. Three copies sent by mail for $1.00. January, 1847.

SOUTHERN AGRICULTURAL WAREHOUSE.

THE subscriber has just opened an Agricultural Warehouse at New Orleans, where he will constantly keep on hand a very general assortment of plows suitable for the Southern planter, together with harrows, rollers, cultivators, horse-powers, grain threshers, rye threshers and hulling machines, fanning mills, burr stone and cast iron grain mills, corn and cob crushers, corn shellers and huskers, vegetable cutters, straw cutters, seed sowers, wheelbarrows, trucks, grain cradles, ox yokes, shovels, spades, forks, scythes, rakes, axes, hoes, picks, chains, churns, grindstones, &c., &c.

Among his plows are those from the celebrated factory of Ruggles, Nourse & Mason, of Worcester; from A. B. Allen of New York; and R. Sinclair Jr., & Co. of Baltimore.

Castings of all kinds of patterns extra for the above.

Agricultural Books, a complete assortment.

Orders will be received for horses, cattle, sheep, and swine, fruit trees and shrubbery; and any other articles planters may wish to order from the north.

R. L. ALLEN.

New Orleans, Dec. 1, 1846.

A DESIRABLE FARM FOR SALE,

SITUATED in Paducah, Kentucky, on the Ohio, at the mouth of Tennessee River, containing 900 acres, 150 of which have been cultivated with grass, grain, tobacco, sweet potatoes, orchards, &c. This estate is well wooded and watered, and is in every respect adapted for a grazing or stock farm. The improvements otherwise consist of a neat commodious dwelling and kitchen, a smoke house, an out-house for servants, stables for cattle, a tobacco barn with a press, and a large cistern lined with cement. If desirable, the purchaser can have at a reasonable rate, all the stock, household furniture, and implements on the place, most of which are nearly new and in good condition. Price of the farm $3,000. Terms easy. For further particulars apply personally or by letter, post-paid, to A. B. ALLEN, 187 Water st. N. York, or the subscriber on the premises. EDWARD TROYE.

Paducah, Ky., Jan. 4, 1847. 2t

FARMERS', GARDENERS', AND PLANTERS' STORE.—*A. G. MUNN*, Louisville, Ky.

500 bush.	clean	Kentucky	Blue Grass	
500 "	"	"	Orchard Grass,	
300 "	"	"	Red Top,	
200 "	"	Red Clover,		
100 "	"	Timothy,		
200 "	"	Hemp-seed,		
200 "	"	Barley,		
200 "	"	Rye,		
100 "	"	Heavy Seed Oats, 40lbs. per bushel,		

☞ All warranted crops of 1846.

Also—Lucerne, White, Dutch Clover, Millet, Potatoes, Artichokes, Beans, Yams, Apple Seeds, Peach Pits, &c. &c. together with a large stock of *FRESH GARDEN SEEDS*, by the pound, ounce, or in papers, put up to suit any market. A liberal discount made to dealers.

Also a large stock of Agricultural and Horticultural Implements, such as Plows, Harrows, Corn-shellers, Cultivators, Straw-cutters, Fanning-mills, Hoes, Rakes, Spades, Shovels, Axes, Trace-chains, Churns, Scythes, Cradles, Knives, &c &c. Orders from abroad will meet with prompt attention.

N. B. Agent for various Nurseries East and West.

AMERICAN AGRICULTURE.

BEING a condensed Encyclopædia of Northern and Southern Farming, embracing Soils, Manures, Draining, Irrigation, and all staple productions, as the grasses, grain, roots, and miscellaneous articles; cattle, the dairy, horses, sheep, mules, swine, and poultry; their treatment, food, diseases, &c., &c. Price $1 retail. A liberal discount to the trade. For sale by

SAXTON & MILES, 205 Broadway.
A. B. ALLEN, 187 Water Street.

TO THE PUBLIC.

BY reference to the first page of this number, it will be seen that Messrs. HARPER & BROTHERS have assumed the publication of the *American Agriculturist;* and in doing so the public are assured that it will be continued with increased vigor, and with a steady eye to its general improvement. They intend it as a pioneer to a series of works written expressly for the agricultural community; and in undertaking the publication of these, they are persuaded, that they are best serving the interests of the Farmer and Planter—the largest, the most worthy, and most important class of our great Republic.

The editorial department will remain unchanged; and the subscriber will, as heretofore, do all in his power to make the work useful, and entitle him to the continued regard and confidence of his readers.

We respectfully solicit the attention of our friends, and all those having dealings with Messrs. Harper & Brothers, to use their best endeavors to circulate this periodical. The terms are very liberal; and in aiding to diffuse a work of this highly useful character, they may be assured that they will not only be serving their own interests, but at the same time greatly benefit their fellow-citizens.

The subscription books of the Agriculturist will continue to be kept at the old office of publication, 205 Broadway, by CHARLES M. SAXTON, of the late firm of Saxton & Miles. Our former patrons will please forward their subscriptions to him as before, and address him on all matters relating thereto.

New York, February, 1st, 1847. A. B. ALLEN.

NOTICE.

THE Copartnership heretofore existing between the subscribers under the name and firm of Saxton & Miles, is this day dissolved by mutual consent. CHARLES M. SAXTON,
EARL E. MILES.

New York, January 27th, 1847.

NEW YORK AGRICULTURAL WAREHOUSE.

ON COMMISSION.

FARMERS, Planters, and Gardeners, will find the LARGEST AND MOST COMPLETE assortment of Agricultural Implements of all kinds, at this Establishment, ever offered in the New York Market. Most of these implements are of new and highly improved patterns, warranted to be made of the best materials, put together in the strongest manner, of a very superior finish, and offered at the lowest cash prices.

Among these implements are upwards of FIFTY different kinds of Plows, manufactured by Ruggles, Nourse & Mason, of Worcester, Mass, also in New York—for the South as well as for the North; Harrows of different patterns and sizes; Rollers of wood and cast-iron on a new principle; Seed Sowers for all kinds of seeds, a recent invention; Cultivators, with different kinds of teeth; Horse powers of wood or of cast-iron, very strong and superior; Grain Threshers; Fanning Mills; Mills for grinding corn, &c., a new invention; Corn Sheller for hand or horse power, the latter shelling 200 bushels of ears per hour; Vegetable Cutters, will cut a bushel of roots for Cattle in two minutes; Hay, Straw, and Corn-stalk Cutters; Scythes, Rakes, Shovels, Spades, Hoes; and Field and Garden tools of all kinds.

Castings for the various kind of Plows manufactured in Worcester and New York.

Seeds for the Farmer and Gardener.—A choice assortment of the various kinds, such as Improved Winter and Spring Wheat, Rye, Barley, Oats, Corn, Beans, Peas, Rutabaga Turnip, Cabbage, Beet, Carrot, Parsnip, Clover and Grass Seeds, and improved varieties of Potatoes.

Wire-Cloths and Sieves.—Different kinds and sizes constantly on hand.

Fertilizers.—Peruvian and African Guano, Lime, Plaster of Paris, &c.

Fruit and Ornamental Trees and Shrubs.—Orders taken for these, and executed from a choice of the best Nurseries, Gardens, and Conservatories, in the United States.

Horses, Cattle, Sheep, and Swine.—Orders executed for Stock of all kinds, to the best advantage.

The American Agriculturist Almanac.—32 pages, with wood cuts. Price $15 per thousand.

Agricultural Books.—A general assortment of all kinds.

A liberal discount made to dealers.

A. B. ALLEN, 187 Water Street, N. Y.

FIELD AND GARDEN SEEDS.

A LARGE and complete assortment of Field and Garden Seeds of all kinds constantly on hand, for sale by
A. B. ALLEN & CO., 187 Water Street, N. Y.

STOCK FOR SALE.

MATCH and single horses, some of which can trot their mile under three minutes, others rack and gallop easily, making admirable saddle-horses for ladies and gentlemen; Durham, Devon, Hereford, and Ayrshire Cattle; Merino, Saxon, Southdown, and Leicester Sheep; the large white English breed of Swine, Berkshires; Poultry, &c., &c. Apply to
A. B. ALLEN & CO., 187 Water Street.

THE AMERICAN AGRICULTURIST.

ISSUED Monthly, by C. M. SAXTON, 205 Broadway, New York, containing 32 pages, royal octavo.

TERMS—One Dollar per year in advance; three copies for Two Dollars; eight copies for Five Dollars.

Each number of the Agriculturist contains but One sheet, and is transported by mail under the same regulations as newspapers, viz.: *free* any distance not over 30 miles from its place of publication; over this and within 100 miles, or to any town in the State of New York, *one cent* postage on each number, and *one and a half cents* if over 100 miles, without the State.

Travelling Agents wanted, to whom the most liberal compensation will be allowed.

CHEAP PLOWS.

SINGLE-HORSE Plows, from $2.00 to $3.00 each.
Double-horse do. " $3.00 to $6.00 "

The woods of these Plows are made of the best of *White Oak.* The handles are *steamed* and then *bent crooked*, instead of being *sawed* out. This makes them much stronger and more durable. The castings are made from good *new pig iron*, without any admixture of *old scrap.* The wrought iron work is of excellent quality, with *extras* attached to the plows. A liberal discount to dealers. A. B. ALLEN & CO., 187 Water st., New York.

FOR SALE IN WESTCHESTER COUNTY,

A VERY desirable Farm situated one mile from the N. Y. and H. R. R. at White Plains, containing 60 acres (including 14 acres wood) with plum, peach, and apple orchards, and requisite buildings. Would make a convenient and beautiful country residence for a person having business to attend to in the city. For map of premises and particulars apply to
2tf ABRAHAM BELL & SON, 117 Fulton st.

AMERICAN AGRICULTURE,

BY R. L. ALLEN.

THE cheapest and most valuable book for a Farmer ever printed; being a complete guide, both practical and scientific, for the management of the Farm. Containing a concise and plainly written exposition of the general duties pertaining to the cultivation of the Earth, the breeding of Live Stock, &c. &c.

The reader can form some idea of what he is going to buy, from the fact that this work treats, in a plain practical manner, of upwards of *Eight Hundred* different subjects, important to the Farmer, the Planter, the Stock Breeder, and the Horticulturist. It also touches on Geology, Chemistry, Botany, Anatomy, Physiology, and Mechanics, as applicable to Agriculture.

This book contains 437 pages, beautifully bound in cloth gilt, suitable for a library. It would be a most valuable premium for distribution among Agricultural Societies, to which, and to the Trade, a liberal discount would be made. Price only one dollar.
For sale by A. B. ALLEN & CO., 187 Water st., and
tf C. M. SAXTON, 205 Broadway, N. York.

CONTENTS OF FEBRUARY NUMBER.

Planting the Isabella Grape-Vine 41
New York Farmers' Club } 42
Allen's American Agriculture }
Eagle Self-sharpening Plows 43
A Mowing Machine, }
Farmers, send in your Facts } 44
American Agricultural Association }
Cultivation of the Water-cress 45
Preservation and Application of Manures, } 46
No. 2, A. Beatty }
The Land Sabbath; Analysis of the } 47
Oat, No. 1. John P. Norton }
Remarkable Instance of the Vegetation of Maize 49
The Army Worm, M; Hints to American } 50
Flax-Growers, John Parker }
New Seedling Potatoes, N. S. Smith 51
The Corn Fly Weevil, No. 1, Edmund Ruffin 52
British and Irish Flax Culture, No. 4, Warne's Treatise 53
Mr. Norton's Letters, No. 2 54
Popular Errors, No. 3, J. McK. } 55
Meeting of American Wool-Growers }
The Horse, No. 2 56
Mastodon Cotton, No. 1, R. Abbey; Application } 58
and Good Effects of Guano, Rev. Ansel Downs }
Management of Honey-Bees, No. 7, T. B. Miner } 59
Weather Predictions, Arago }
Letters from the South, No. 3, R. L. Allen 60
Facts about Bacon, Solon Robinson 63
Agricultural Publications and Societies, George Vail }
New Mode of Fattening Hogs, James S. Peacocke } 64
Recipes for Cooking Indian Corn, A. Barclay }
Expansion of Bodies by Heat }
LADIES' DEPARTMENT: Reply to Reviewer on } 65
Knitting, &c.; Musical Bells for Cows, Cato }
BOYS' DEPARTMENT: Buying Apples, B.; Fog, } 66
Vapor, &c., Smith's First Book of Geography }
Foreign Agricultural News 67
Editor's Table, Gun-Cotton 68
Review of the Market 70